21" Auto scan Colour Monitor

Chassis : M25P

Service
Service
Service

201B4 M25P

EPA POLLUTION PREVENTER

201B 40/00C

DDC/Power saving//TCO

Service Manual

Horizontal frequencies
30 - 115 kHz

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

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IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

* *Broken Line* ▬ ▪ ▬ ▪ ▬ ▪

Technical Data

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Technical Specification*

CRT

Size and deflection	:21 inch/51cm,90°defection angle
Dot pitch/Grille pitch	: 0.25mm
Horizontal pitch	: 0.21mm
Tube type	: Shadow mask,super high contrast, antiglare, anti-static, anti-refleection, light transmission 43%
Phosphor	: P22
Recommended display area	: 15.4"x11.6"/392 x 294 mm
Maximum display area	: 16.0"x12.0"/406 x 305 mm
Scanning	
Horizontal scanning	: 30 - 115 KHz
Vertical scanning	: 50 - 160 Hz
Video	
Video dot rate	: 297 Mhz
Input impedance	
-Video	: 75 Ohm
- Sync	: 2.2 kOhm
Input signal levels	: 0.7Vpp Separate sync
Sync input signal	: Composite sync
Sync polarities	: Positive and negative

White Color Temperature

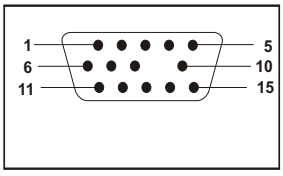
Chromaticity CIE coordinates:		
at 9300 °k	x = 0.283	y = 0.297
6500 °k	x = 0.313	y = 0.329
5500 °k	x = 0.332	y = 0.347

Physical Specifications

Dimensions	: 482x476x467mm(including base) 482x437x428mm(excluding base)
weight	: 23.5 Kg
Power supply	: 90 - 264 VAC, 50/60HZ
Power consumption	: <160 Watt
Operating condition	
Temperature	: 0 °C - 35 ° C
Relative Humidety	: 10 % - 90 %
Storage condition	
Temperature	: - 25 ° C - 65 ° C
Relative Humidity	: 5 % - 95 %

Pin assignment :

The 15-pin D-sub connector(male) of the signal cable (IBM systems) :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin
2	Green video input	10	Logic ground
3	Blue video input	11	Identical output - Connected to pin 10
4	Identification output - Connected to pin 10	12	Serial data line(SDA)
5	Ground	13	H.Sync /H+V
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Data Storage(Resolution Modes)Factory preset modes:

This monitor has 34factory-preset modes as indicates in the following table:

Mode	Resolution	Frequency H(KHz) / V(Hz)	Sync. polarity H	Sync. polarity V
1	640 X 480	31.469KHz/59.941 Hz	-	-
2	720 X 400	31.468KHz/70.084 Hz	-	+
3	640 X 480	37.5 KHz/75Hz	-	-
4	640 X 480	37.861 KHz/72.810 Hz	-	-
5	800 X 600	37.879 KHz/60.317 Hz	+	+
6	640 X 480	43.269 KHz/85.008 Hz	-	-
7	800 X 600	46.875 KHz/75.000 Hz	+	+
8	800 X 600	48.077 KHz/72.188 Hz	+	+
9	1024 X 768	48.363KHz/60.004Hz	-	-
10	832 X 624	49.722 KHz/74.546Hz	+	+
11	640 X 480	50.628 KHz/100.10 Hz	-	-
12	800 X 600	53.674 KHz/85.061 Hz	+	+
13	1024 X 768	56.476 KHz/70.069 Hz	-	-
14	1024 X 768	60.023KHz/75.029Hz	+	+
15	800 X 600	63.923 KHz/100.00 Hz	+	+
16	1280 X 1024	63.981KHz/60.020Hz	+	+
17	1024 X 768	68.677KHz/84.997Hz	+	+
18	1152 X 870	68.681KHz/74.979Hz	-	-
19	1600 X 1200	75.000 KHz/60.000 Hz	+	+
20	1280 X 1024	79.976KHz/75.024Hz	+	+
21	1600 X 1200	81.250 KHz/65.000 Hz	+	+
22	1792X 1344	83.640 KHz/59.999 Hz	+	+
23	1856X 1392	86.333 KHz/59.995 Hz	+	+
24	1600 X 1200	87.500 KHz/70.000 Hz	+	+
25	1920X 1440	90.000 KHz/60.000 Hz	+	+
26	1280 X 1024	91.146KHz/85.024Hz	+	+
27	1600 X 1200	93.750KHz/75.000Hz	+	+
28	1600 X 1200	106.250KHz/85.000Hz	+	+
29	1792 X 1344	106.270 KHz/74.997 Hz	+	+
30	1920 X 1440	112.5 KHz/75 Hz	+	+
31	1856 X 1392	109.950KHz/75 Hz	+	+
32	1792 X 1344	114.048KHz/81 Hz	+	+
33	1280 X 1024	115.236KHz/106.7 Hz	+	+
34	1600 X 1200	115.238KHz/91.758 Hz	+	+

Automatic Power Saving

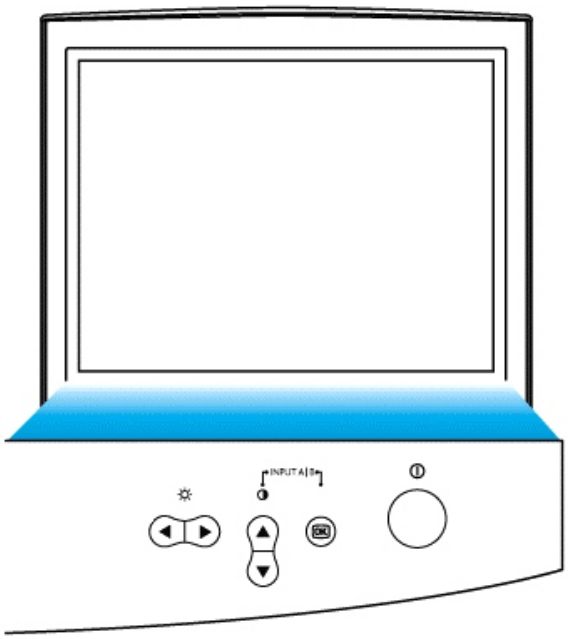
If you have VESA's DPMS compliance display card or software installed in your PC,the monitor can automaticlly reduce its power consumption when not in use. And if an input from a keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signalling of this automatic power saving features :

Power Management Definition						
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING(%)	LED COLOR
ON	Active	Yes	Yes	< 112 W	0 %	Green
Stand-by	Blanked	No	Yes	< 2 W	97 %	Yellow
Suspend	Blanked	Yes	No	< 2 W	97 %	Yellow
OFF	Blanked	No	No	< 2 W	97 %	Amber

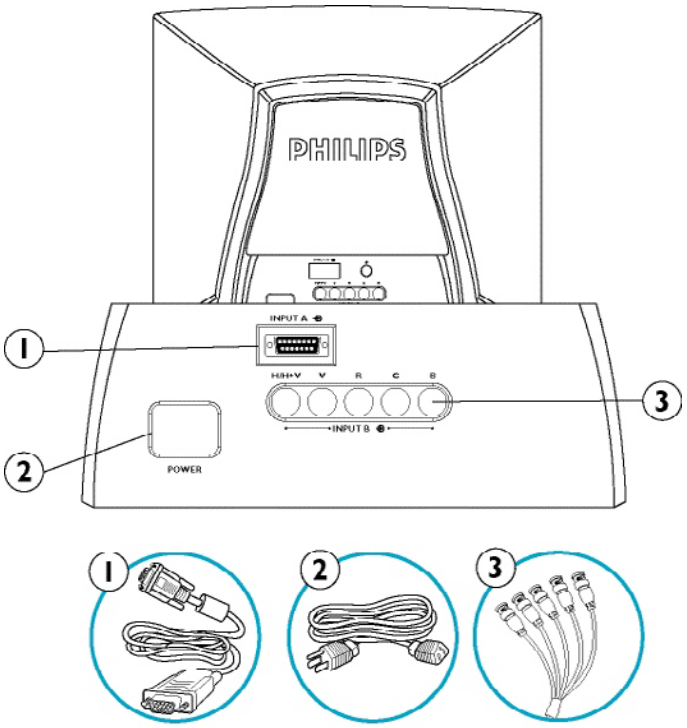
This monitor is Energy Star® compliant .As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Installation

Front View



Rear View



Power button switches your monitor on.

OK button which when pressed will take you to the OSD controls

Contrast hotkey. When the UP arrow is pressed, the adj ustment controls for the CONTRAST will show up.

UP and DOWN buttons are used when adjusting the OSD of your monitor

Brightness hotkey. When the RIGHT arrow is pressed ,the adjustment controls for BRIGHTNESS will show up.

LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

INPUT A|B

By pressing both the UP and OK buttons, you can easily access the Input Signals A and/or B.

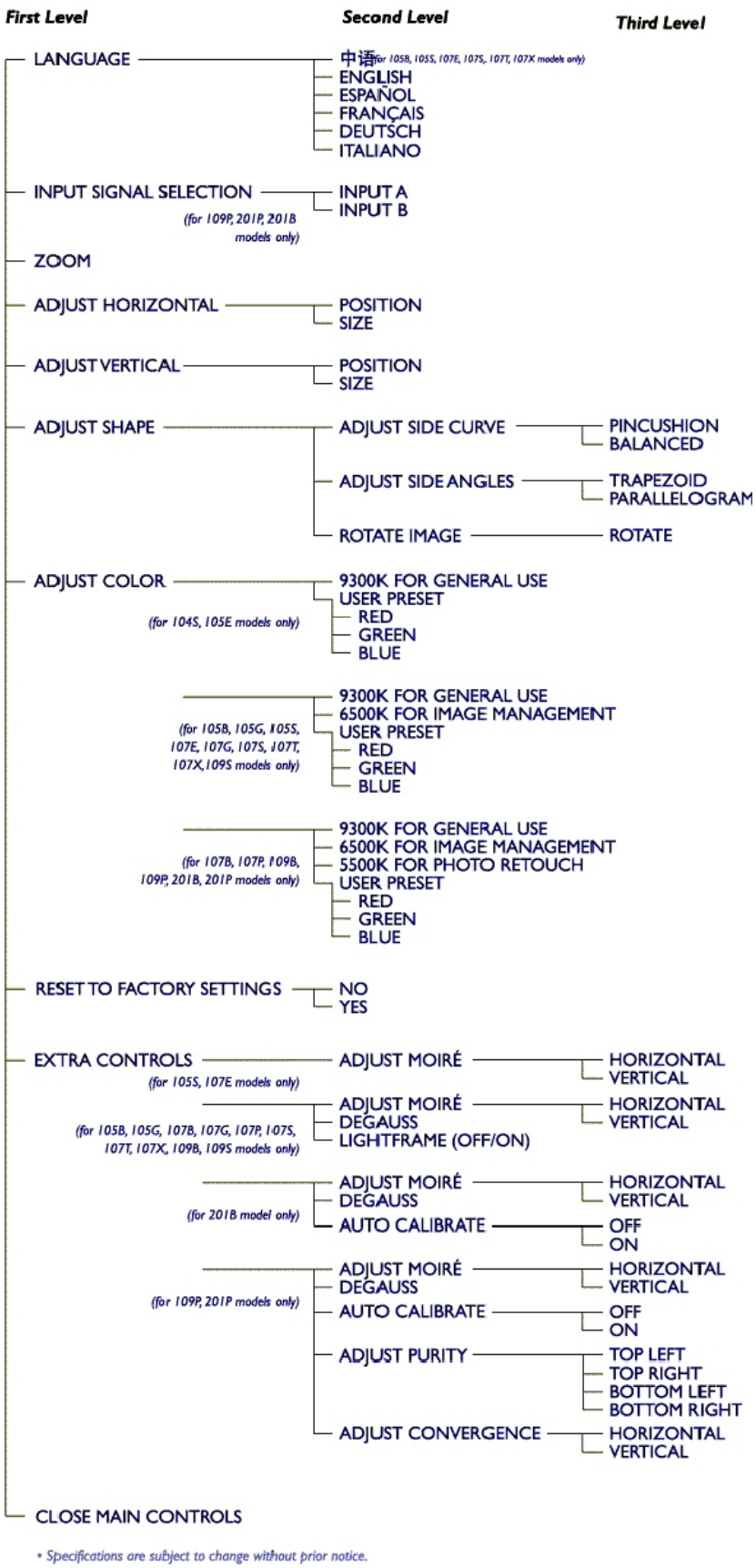
1. D-Sub Port - Attach the D-Sub connector that comes with your monitor here. Other end connects to your PC.
2. Power in - Attach power cable here.
3. BNC Connectors - Attach the connectors here to get the best video performance from your monitor.

OSD menu tree structure

The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

CRT OSD tree / English



• Specifications are subject to change without prior notice.

OSD Adjustments

Go to cover page

The OSD Controls

BRIGHTNESS

To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness is recommended.

1) Press the ◀ or ▶ button on the monitor. The BRIGHTNESS window appears.

2) Press the ◀ or ▶ button to adjust the brightness.

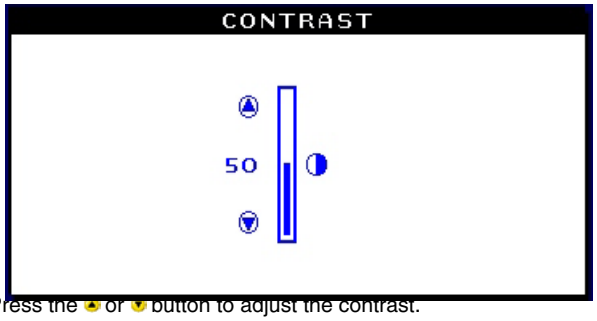
3) When the brightness is adjusted to the level desired, stop pressing the ◀ or ▶ button and after three seconds the BRIGHTNESS window will disappear with the new adjustment saved.

Smart Help After the BRIGHTNESS window has disappeared, to continue to the CONTRAST window, follow the steps under CONTRAST.

CONTRAST

To adjust your screen's contrast, follow the steps bellow. Contrast is the difference between the light and dark areas on the screen. A 100% contrast is recommended.

1) Press the ▲ or ▼ button on the monitor. The CONTRAST window appears.



2) Press the ▲ or ▼ button to adjust the contrast.

3) When the contrast is adjusted to the level desired, stop pressing the ▲ or ▼ button and after three seconds the CONTRAST window will disappear with the new adjustment saved.

Smart Help After the CONTRAST window has disappeared, to continue to the MAIN CONTROLS, follow the steps under LANGUAGE

LANGUAGE

The ON SCREEN DISPLAY shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.

1) Press the M button on the monitor. The MAIN CONTROLS window appears. LANGUAGE should be highlighted.

2) Press the M button again. The LANGUAGE window appears.

3) Press the ▲ or ▼ button until the desired language is highlighted.

4) Press the M button to confirm your selection and return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted...

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to INPUT SIGNAL SELECTION, press the ▲ button until INPUT SIGNAL SELECTION is highlighted. Next, follow steps 3 - 5 under INPUT SIGNAL SELECTION.

. . . to exit completely, press M the button

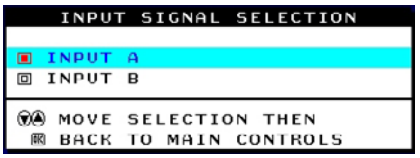
INPUT SIGNAL SELECTION (Not available in all models)

INPUT SIGNAL SELECTION determines what you see on the screen. The default setting is INPUT A, but if the video input signal is different that the output signal, you may want to change it to INPUT B.?

1) Press the M button on the monitor. The MAIN CONTROLS window appears.

2) Press the ▼ button until INPUT SIGNAL SELECTION is highlighted.

3) Press the M button. The INPUT SIGNAL SELECTION window appears.



4) Press the ▲ or ▼ button to highlight INPUT B or INPUT A.

5) Press the M button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

After returning to MAIN CONTROLS . . .

. . . to continue to ZOOM, press the ▲ button until ZOOM is highlighted. Next, follow steps 3 - 5 under ZOOM.
. . . to exit completely, press the M button

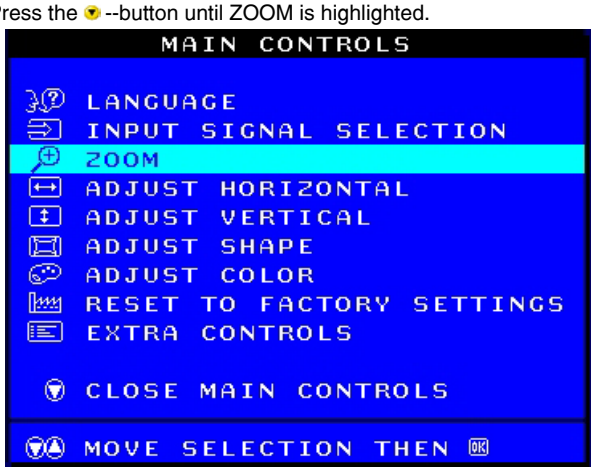
OSD Adjustments

ZOOM

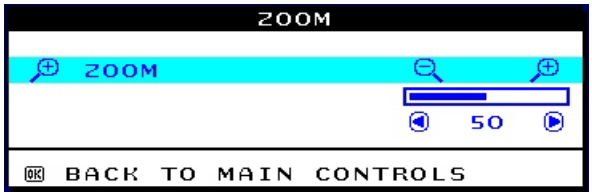
ZOOM increases or decreases the size of the images on your screen. To adjust the ZOOM follow the steps below.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the --button until ZOOM is highlighted.



3) Press the button. The ZOOM window appears.



4) Press the or button to adjust ZOOM.

5) Press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST HORIZONTAL, press the button until ADJUST HORIZONTAL is highlighted. Next, follow steps 3 - 7 under ADJUST HORIZONTAL.

. . . to exit completely, press the button

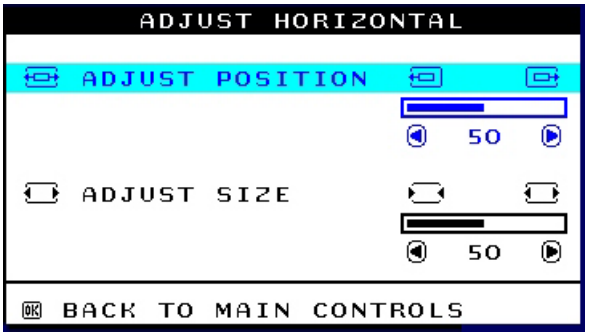
ADJUST HORIZONTAL

ADJUST POSITION under ADJUST HORIZONTAL shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST HORIZONTAL expands or controls the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

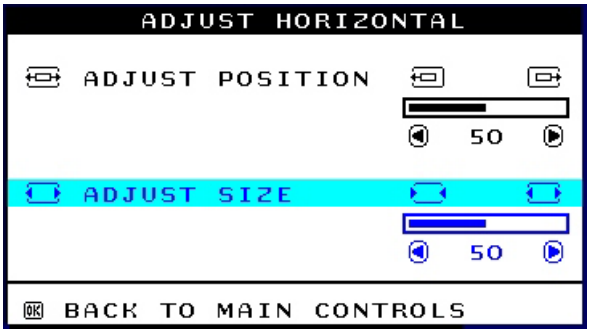
2) Press the button until ADJUST HORIZONTAL is highlighted.

3) Press the button. The ADJUST HORIZONTAL window appears. ADJUST POSITION should be highlighted.



4) Press the or button to move the image to the left or right.

5) When the position is adjusted, press the button to return to MAIN CONTROLS window, or press the to highlight ADJUST SIZE.



6) To adjust the horizontal size, press the or button.

7) When the size is adjusted, press the button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST VERTICAL, press the button until ADJUST VERTICAL is highlighted. Next, start with step 3 under ADJUST VERTICAL and follow the directions.

. . . to exit completely, press the button

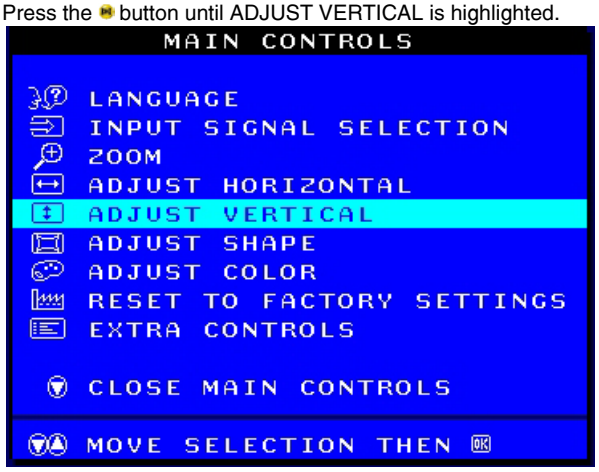
ADJUST VERTICAL

ADJUST POSITION under ADJUST VERTICAL shifts the image on your screen either up or down. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST VERTICAL expands or controls the image on your screen, pushing it out toward the top or bottom or pulling it in toward the center.

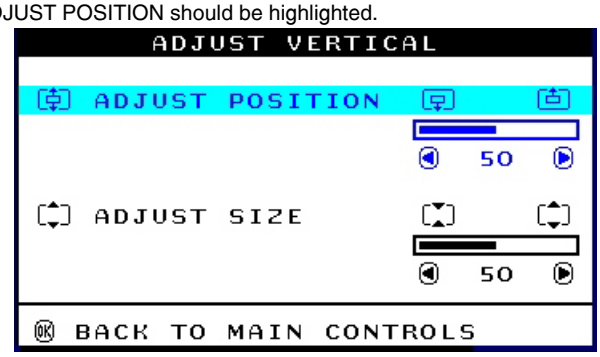
1) Press the button on the monitor. The MAIN CONTROLS window appears.

OSD Adjustments

2) Press the button until ADJUST VERTICAL is highlighted.

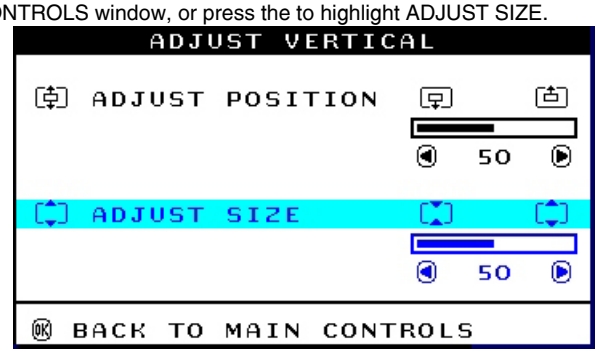


3) Press the button. The ADJUST VERTICAL window appears. ADJUST POSITION should be highlighted.



4) Press the or button to move the image up or down.

5) When the position is adjusted, press the button to return to MAIN CONTROLS window, or press the to highlight ADJUST SIZE.



6) To adjust the vertical size, press the or button.

7) When the size is adjusted, press the button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST SHAPE, press the button until ADJUST SHAPE is highlighted. Next, start with step 3 under ADJUST SHAPE and follow the directions.

. . . to exit completely, press the button

ADJUST SHAPE

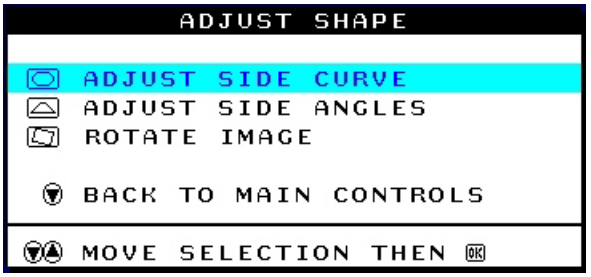
ADJUST SIDE CURVE

ADJUST SIDE CURVE under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use these features only when the picture is not square.

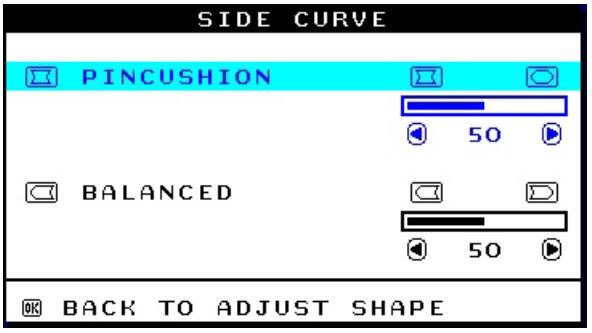
1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until ADJUST SHAPE is highlighted.

3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

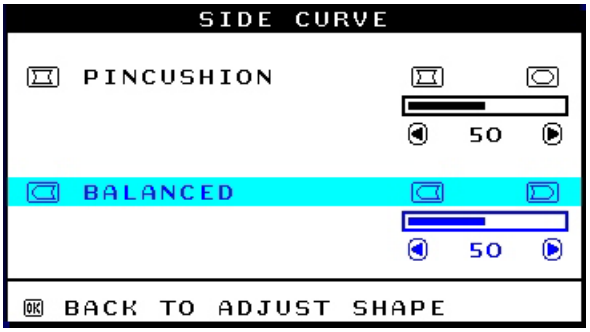


4) Press the button. The SIDE CURVE window appears. PINCUSHION should be highlighted.



5) To adjust the pincushion, press the or button.

6) When the pincushion is adjusted, press the button to highlight BALANCED or press the button to return to the ADJUST SHAPE window.



7) To adjust the balanced pincushion, press the or button.

8) When the balanced pincushion is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.

9) Press the button to return to the MAIN CONTROLS window, or press the button until ADJUST SIDE ANGLES is highlighted.

Smart Help After returning to MAIN CONTROLS . . .

...to continue to ADJUST SIDE ANGLES, start with step 5 under ADJUST SIDE ANGLES and follow the directions.

...to exit completely, press the button twice.

...to adjust only the BALANCED pincushion, follow steps 1 - 4 above, then press the button, and follow steps 7 - 9.

...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the button, and follow steps 7 -9

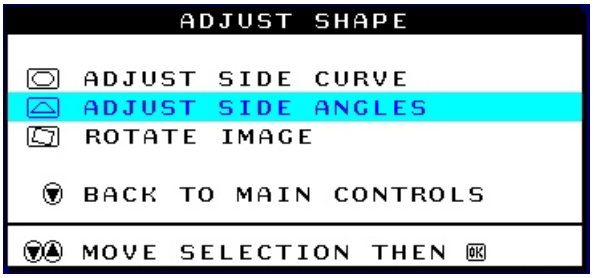
ADJUST SIDE ANGLES

ADJUST SIDE ANGLES under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are TRAPEZOID and PARALLELOGRAM. Note: use these features only when the picture is not square.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

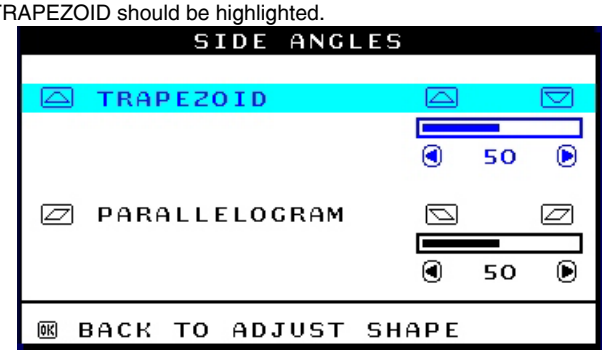
2) Press the button until ADJUST SHAPE is highlighted.

3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.



4) Press the button to highlight ADJUST SIDE ANGLES.

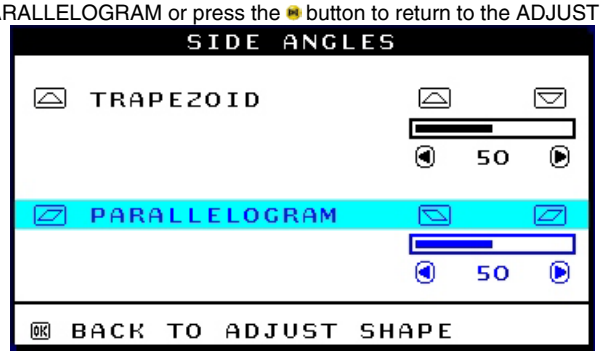
5) Press the button. The SIDE ANGLES window appears. TRAPEZOID should be highlighted.



6) To adjust the trapezoid, press the or button.

SHAPE window.

7) When the trapezoid is adjusted, press the button to highlight PARALLELOGRAM or press the button to return to the ADJUST



8) To adjust the parallelogram, press the or button.

9) When the parallelogram is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.

10) Press the button to return to the MAIN CONTROLS window, or press the button until ROTATE IMAGE is highlighted.

Smart Help After returning to MAIN CONTROLS . . .

...to continue to ROTATE IMAGE, start with step 5 under ROTATE IMAGE and follow the directions.

...to exit completely, press the button twice.

...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the button, and follow steps 7 -9

ROTATE IMAGE

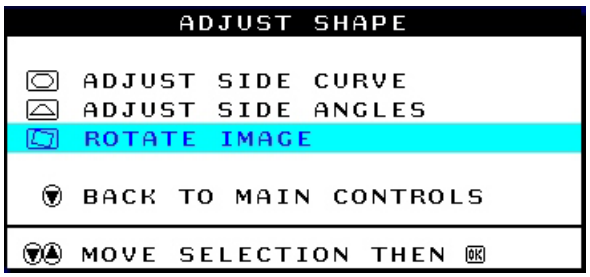
ROTATE IMAGE under ADJUST SHAPE allows you to adjust one of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use this feature only when the picture is not square.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until ADJUST SHAPE is highlighted.

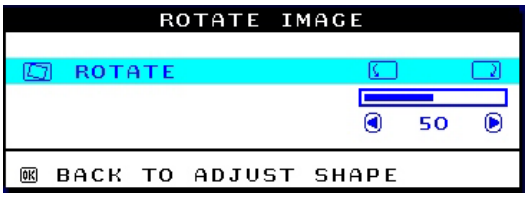
3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

4) Press the arrow until ROTATE IMAGE is highlighted.



OSD Adjustments

5) Press the button. The ROTATE IMAGE window appears. ROTATE should be highlighted.



6) To adjust the rotation, press the or button.

7) When the rotation is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN CONTROLS should be highlighted.

8) Press the button to return to MAIN CONTROLS.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST COLOR, press the button until ADJUST COLOR is highlighted. Next, start with step 3 under ADJUST COLOR and follow the directions.

...to exit completely, press the button twice.

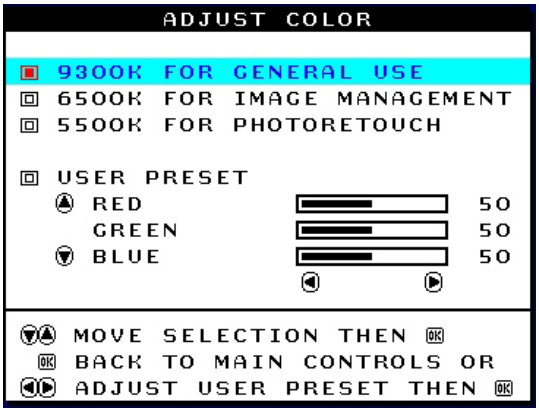
ADJUST COLOR

Your monitor has two preset options you can choose from. The first option is for GENERAL USE, which is fine for most applications. The second option is for GAMES, which is for playing computer games. When you select one of these options, the monitor automatically adjusts itself to that option. There is also a third option, USER PRESET, which allows you to adjust the colors on your screen to a setting you desire.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

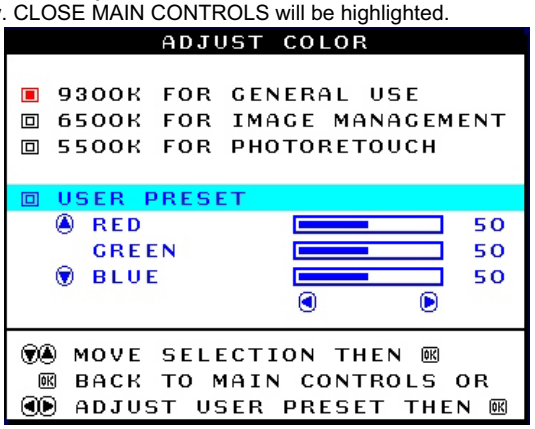
2) Press the button until ADJUST COLOR is highlighted.

3) Press the button. The ADJUST COLOR window appears.



4) Press the or button to highlight 9300K for GENERAL USE, 6500K for GAMES, or USER PRESET.

5) Once you have highlighted GENERAL USE or GAMES, press the button to confirm you selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



6a) If USER PRESET is highlighted, press the button to highlight RED. Next, press the LEFT CURSOR or RIGHT CURSOR button to adjust the color red.

6b) When finished with RED, press the button to highlight GREEN. Next, press the or button to adjust the color green.

6c) When finished GREEN, press the button to highlight BLUE. Next, press the or button to adjust the color blue.

6d) When all adjustments are complete, press the button to confirm your adjustments and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS. . .

. . . to continue to RESET TO FACTORY SETTINGS, press the button until RESET TO FACTORY SETTINGS is highlighted. Next, start with step 3 under RESET TO FACTORY SETTINGS.

. . . to exit completely, press the button.

RESET TO FACTORY SETTINGS

RESET TO FACTORY SETTINGS returns everything in all the windows to factory presets.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

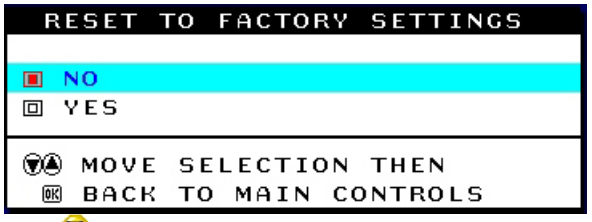
2) Press the button until RESET TO FACTORY SETTINGS is highlighted.

3) Press the button. The RESET TO FACTORY SETTINGS window appears.

OSD Adjustments (Continued)

Go to cover page

4) Press the or button to select YES or NO. NO is the default. YES returns all settings to their original factory adjustments.



5) Press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to EXTRA CONTROLS, press the button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS.

. . . to exit completely, press the button.

EXTRA CONTROLS

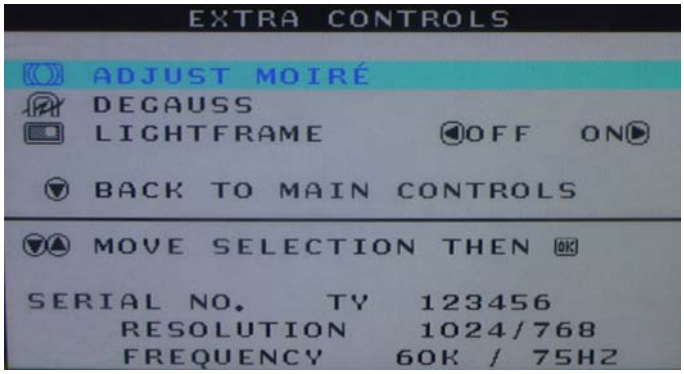
ADJUST MOIRE

EXTRA CONTROLS is a set of three features, including ADJUST MOIRE. Moire is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your moire, follow the steps below. Note: Use only if necessary. By activating ADJUST MOIRE, sharpness can be affected.

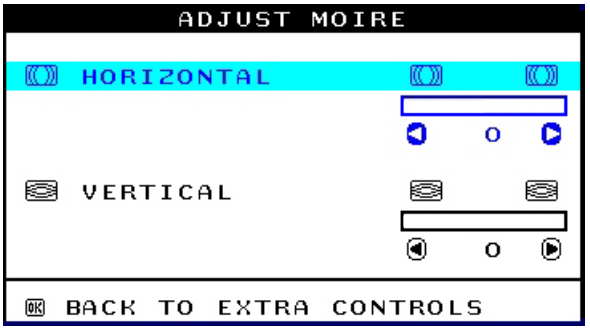
1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the DOWN CURSOR button until EXTRA CONTROLS is highlighted.

3) Press the button. The EXTRA CONTROLS window appears. will ADJUST MOIRE will be highlighted.

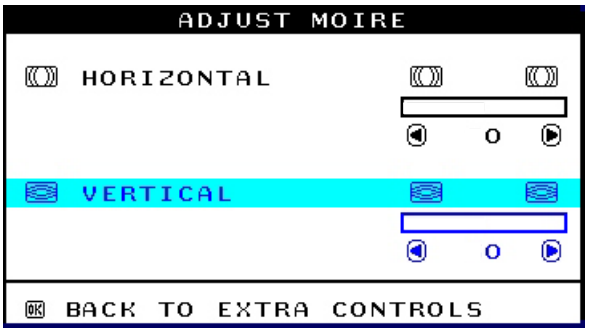


4) Press the button. The ADJUST MOIRE window appears. HORIZONTAL will be highlighted.



5) To adjust the horizontal moire, press the or button.

6) When the horizontal moire is adjusted, press the button to highlight VERTICAL.



7) To adjust the vertical moire, press the or button.

8) When the vertical moire is adjusted, press the button to return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to DEGAUSS, press the button until DEGAUSS is highlighted. Next, start with step 3 under EXTRA CONTROLS, DEGAUSS.

. . . to exit completely, press the button.

OSD Adjustments (Continued), Troubleshooting

Go to cover page

DEGAUSS

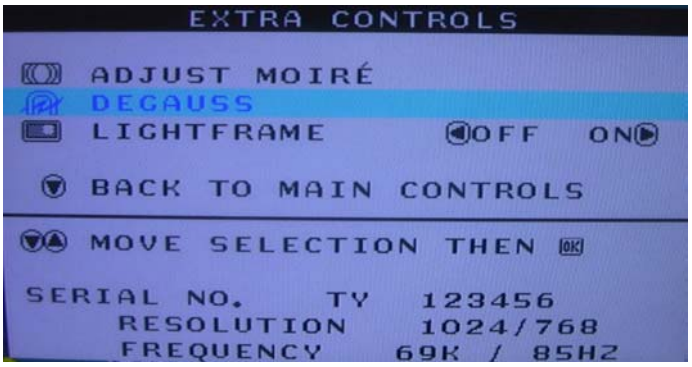
EXTRA CONTROLS is a set of three features, including DEGAUSS. Degaussing removes electromagnetic build up that may distort the color on your screen.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until EXTRA CONTROLS is highlighted.

3) Press the button. The EXTRA CONTROLS window appears. ADJUST MOIRE will be highlighted.

4) Press the button until DEGAUSS is highlighted.



5) To degauss your screen, press the button. Your screen will be degaussed, then the MAIN CONTROLS window will reappear. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to exit completely, press the button.

CLOSE MAIN CONTROLS

Monitor Specific Troubleshooting

Self-Test Feature Check (STFC)

Your monitor provides a self-test feature that allows you to check whether your monitor is functioning properly. If your monitor and computer are properly connected but the monitor screen remains dark, run the monitor self-test by performing the following steps:

1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer.
3. Turn on the monitor.

If the monitor is functioning properly, you will see a OSD message as shown in the following illustration:

This box also appears during normal system operation if the video cable becomes disconnected or damaged. This box will remain on for one minute, go off five seconds, then on for one minute, and will repeat cycle.

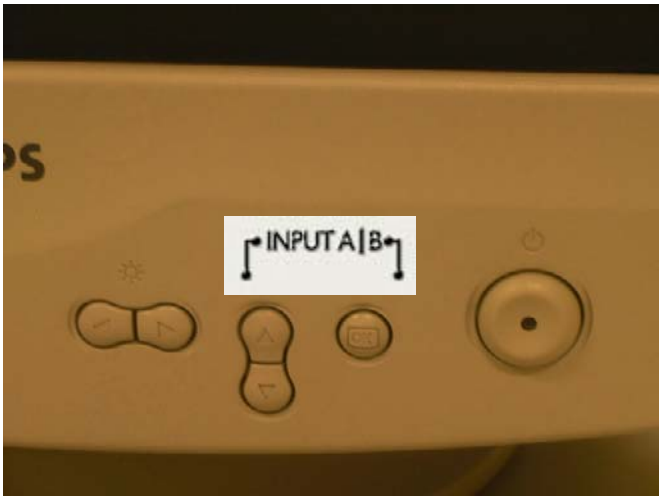
1. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.
2. While in self-test mode, the LED remains green and the pattern remains on and stationary.

If your monitor screen still remains dark after you use the previous procedure, check your video controller and computer system; your monitor is functioning properly.

NO SIGNAL INPUT

If there is something wrong with the input signal, a message appears on the screen although the power indicator LED is still on. The message may indicate that the monitor is NO SIGNAL INPUT or that you need to check the signal cable.

Front Control



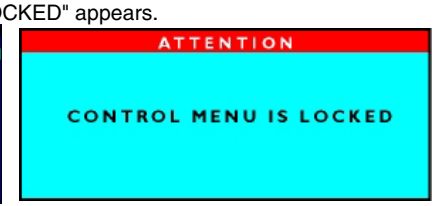
Power button switches your monitor on.
OK button which when pressed will take you to the OSD controls
Contrast hotkey. When the UP arrow is pressed, the adjustment controls for the CONTRAST will show up.
UP and DOWN buttons are used when adjusting the OSD of your monitor
Brightness hotkey. When the RIGHT arrow is pressed, the adjustment controls for BRIGHTNESS will show up.
LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

OSD Lock

OSD lock is a feature which disables the OSD controls. It can be used when the monitor is set up for demonstration purposes or when adjustment of the OSD is not desirable.

Switch on OSD lock feature:

Press and hold the button continuously for 15 seconds.
Release the button when the message "CONTROL MENU IS LOCKED" appears.



Switch off OSD lock feature:

Press and hold the button continuously for 15 seconds or until the message window "CONTROL MENU IS LOCKED" disappears, and "MAIN CONTROLS" appears.

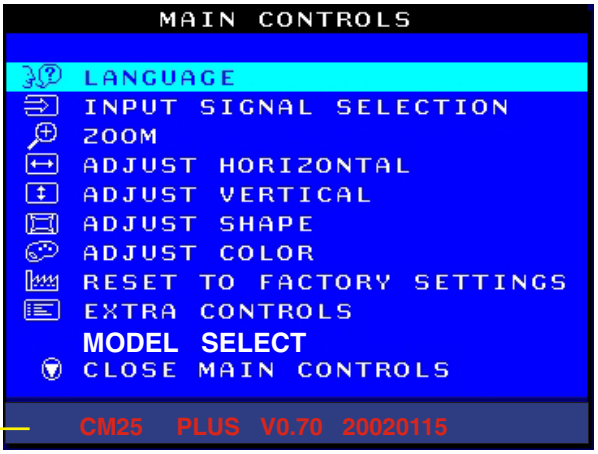
Default setting of MODEL SELECT (Do not change it.)

MODEL SELECT

- 115K 201B4
- 111K 109P4
- 130K 202P4
- RESERVE
- RESERVE
- SWDDC

To access factory mode

1. Turn off monitor (don't turn off PC)
2. Press " " and " " simultaneously on the front control panel, then press " ", wait till the OSD menu with characters CM25 PLUS V0.70 20020115 (below OSD menu)" come on the screen of monitor.



Factory Mode Indicator

3. If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.
4. Using " " : to select OSD menu.
5. Using " " : to increase or decrease the setting.
6. Using " " to access/confirm the selection.

To leave factory mode

7. After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

To access BURN IN mode

First of all, monitor displays an image.
1. Disconnect the video cable (interface cable).
2. Turn off monitor
3. Press " " and " " simultaneously on the front control panel, then the BURN IN mode comes on the screen of monitor as below.

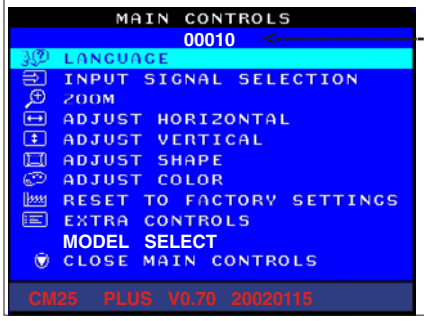
50 seconds around

5 seconds around

repeatly

4. **Reconnect the video cable, then return to normal image.**

SERVICE MODE (Indication-Factory mode)



00010: stands for
1. using 10 hours already.
2. turn on/off 10 times.
3. using several hours + turn on/off monitor.

Warning and Notes

Go to cover page

Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠ .

2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).

3. **ESD**
   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that saferty goggles be worn when replacing the picture tube.

7. When making adjustments,use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the defleciton unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.

10. After repair, the wiring should be fastened in place with the cable clamps.

11. All units that are returned for service or repair must pass the original manufactures safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
   - Mode : 640 * 480 (31.5kHz / 60Hz)
   - Signal pattern : grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

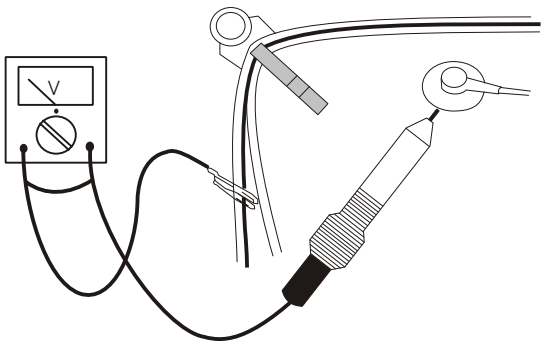


Fig.1

0. Location of the panel

0.1 Main panel (1160)
0.2 Video panel (1161)

Fig. 2

1. General

To be able to perform measurements and repairs on the "circuit boards", the monitor should be placed in Service Position (fig. 1) first:

How to remove the back cover of monitor :
There are 2 screws in the lid [1 screw are at the right side of the monitor, The other 1 screw are at the left side of the monitor],to fix the front cabinet and back cover of the monitor.

Step 1:To open the lid at the right-upper side and 1screw in right-downer side of the monitor.(FIG.3)
Step 2:To open the lid at the left-upper side and 1screw in left-downer side of the monitor.(FIG.4)
Step 3:To remove the backcover, you can see FIG.5
Step 4:To remove the16 screws on the metal shield, and remove the metal shield, you can see FIG.6.

Chassis :
- After remove the back cover & metal shield, you can see the inside of the monitor as Fig. 6.
- To remove 13 screws for service position as Fig. 6 to Fig. 8.
- Include remove bottom plate screw, then slide out chassis board and disconnect metal shield.

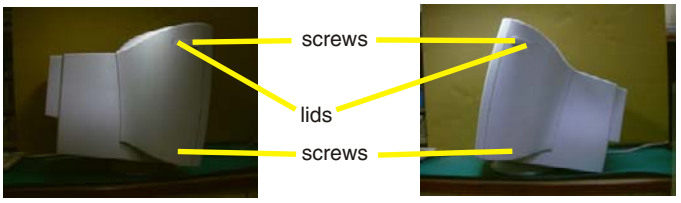


Fig. 3 Fig. 4

Video panel :
- After remove the metal frame (Fig. 5), to remove the metal shield on rear side of Video panel for measurement.

Main panel :
After remove the metal frame.
- To cut out cable tie and disconnect "video panel"
- To disconnect EHT cable
- To disconnect ground wire(1703) of video board.
- To disconnect M1311(4pin) to control panel.
- To disconnect M1501(4pin) yoke connector.
- To disconnect M1131(2pin) degaussing coil
- To slide out Main panel as Fig. 1.

Fig. 5

Fig. 6

Service position :
To get service position as Fig. 1 through Fig. 2 to Fig. 8.

2. Repair instructions

After the service position was obtained, all the panel's copper track side could be accessed.

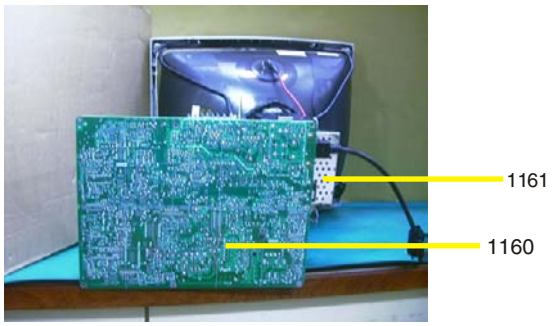


Fig. 1 Service Position

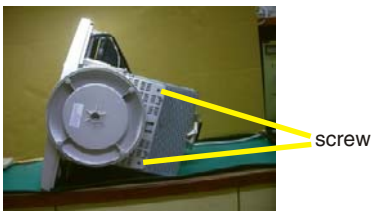


Fig. 7

Fig. 8

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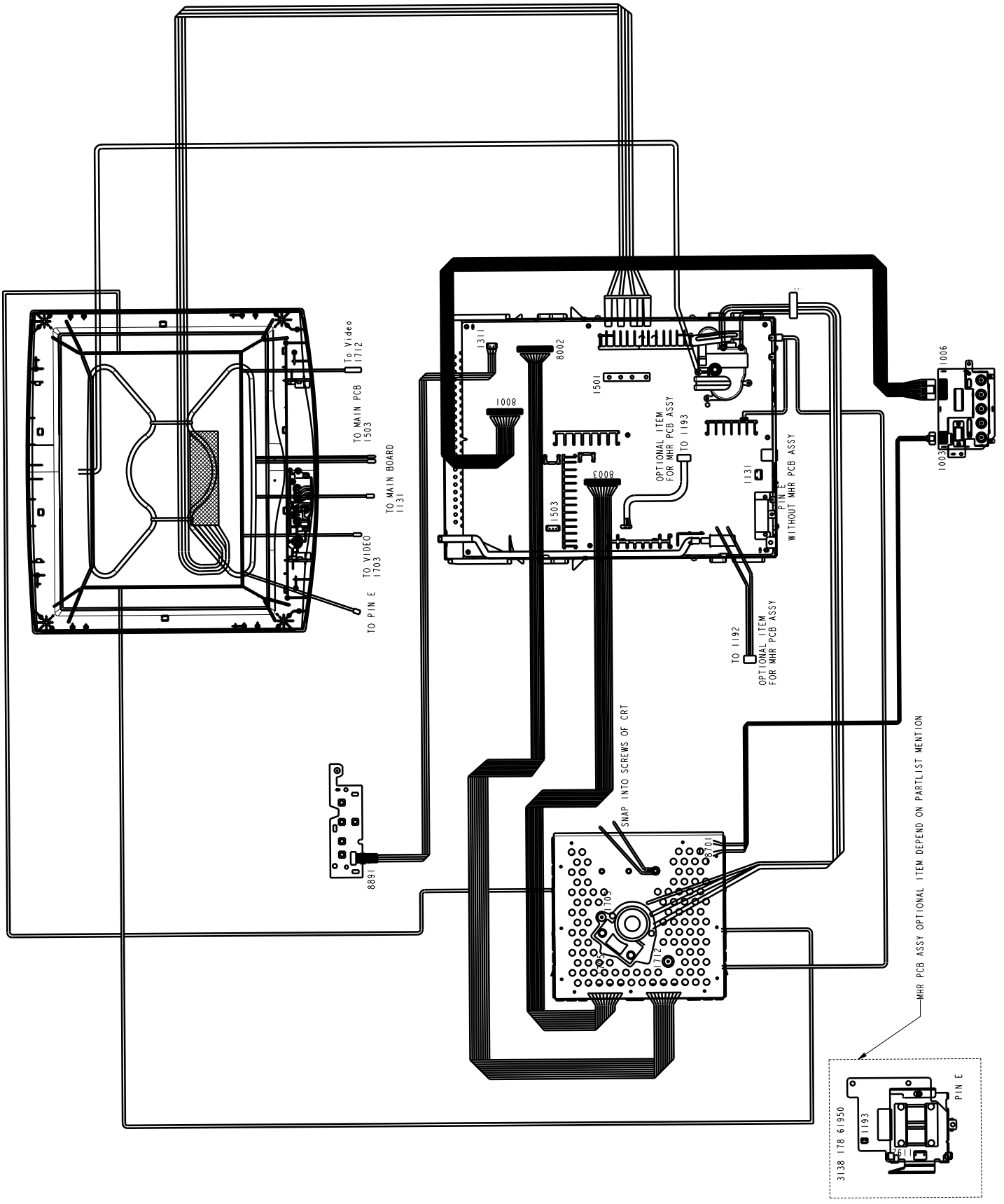
Wiring Diagram



Hex Data of DDC2B

```
************************************************************************
EDID log file
************************************************************************
Vendor/Product Identification
        ID Manufacturer Name        : PHL
        ID Product Code             : 0009 (HEX.)
        ID Serial Number            : 1E240 (HEX.)
        Week of Manufacture         : 8
        Year of Manufacture         : 2002
EDID Version, Revision
        Version                     : 1
        Revision                    : 3
Basic Display Parameters/Features
        Video Input Definition      : Analog Video Input
                                      0.700V/0.000V (0.70Vpp)
                                      without Blank-to-Black Setup
                                      Separate Sync
                                      Composite Sync
                                      without Sync on Green
                                      no Serration required
        Maximum H Image Size        : 40
        Maximum V Image Size        : 30

        Display Transfer Characteristic : 2.86
                (gamma)
        Feature Support (DPMS)      : Standby
                                      Suspend
                                      Active Off
        Display Type                : RGB color display
        GTF supported               : Based on GTF standard
Color Characteristics
        Red   X coordinate          : 0.642
        Red   Y coordinate          : 0.322
        Green X coordinate          : 0.285
        Green Y coordinate          : 0.595
        Blue  X coordinate          : 0.144
        Blue  Y coordinate          : 0.061
        White X coordinate          : 0.283
        White Y coordinate          : 0.297
Established Timings
        Established Timings I       : 720 x 400 @70Hz (IBM,VGA)
                                      640 x 480 @60Hz (IBM,VGA)
                                      640 x 480 @72Hz (VESA)
                                      640 x 480 @75Hz (VESA)
                                      800 x 600 @60Hz (VESA)
        Established Timings II      : 800 x 600 @72Hz (VESA)
                                      800 x 600 @75Hz (VESA)
                                      1024 x 768 @60Hz (VESA)
                                      1024 x 768 @70Hz (VESA)
                                      1024 x 768 @75Hz (VESA)
                                      1280 x 1024 @75Hz (VESA)
        Manufacturer's timings      : 1152 x 870 @75Hz (Apple,Mac II)
Standard Timing Identification #1
        Horizontal active pixels    : 1024
        Aspect Ratio                : 4:3
        Refresh Rate                : 85
Standard Timing Identification #2
        Horizontal active pixels    : 800
        Aspect Ratio                : 4:3
        Refresh Rate                : 85
Standard Timing Identification #3
        Horizontal active pixels    : 1280
        Aspect Ratio                : 5:4
        Refresh Rate                : 75
Standard Timing Identification #4
        Horizontal active pixels    : 1600
        Aspect Ratio                : 4:3
        Refresh Rate                : 75
Standard Timing Identification #5
        Horizontal active pixels    : 1600
        Aspect Ratio                : 4:3
        Refresh Rate                : 85
Standard Timing Identification #6
        Horizontal active pixels    : 1792
        Aspect Ratio                : 4:3
        Refresh Rate                : 75
Standard Timing Identification #7
        Horizontal active pixels    : 1920
        Aspect Ratio                : 4:3
        Refresh Rate                : 75

Detailed Timing #1
        Pixel Clock (MHz)           : 297
        H Active (pixels)           : 1920
        H Blanking (pixels)         : 720
        V Active (lines)            : 1440
        V Blanking (lines)          : 60
        H Sync Offset (F Porch) (pixels): 144
        H Sync Pulse Width (pixels) : 224
        V Sync Offset (F Porch) (lines): 1
        V Sync Pulse Width (lines)  : 3
        H Image Size (mm)           : 392
        V Image Size (mm)           : 294
        H Border (pixels)           : 0
        V Border (lines)            : 0
        Flags                       : Non-interlaced
                                    : Normal Display, No stereo
                                    : Digital Separate sync.
                                    : Negative Vertical Sync.
                                    : Negative Horizontal Sync.

Monitor Descriptor #2
        Serial Number               : TY  123456

Monitor Descriptor #3
        Monitor Name                : PHILIPS 201B4

Monitor Descriptor #4
        Monitor Range Limits
        Min. Vt rate Hz             : 50
        Max. Vt rate Hz             : 160
        Min. Horiz. rate kHz        : 30
        Max. Horiz. rate kHz        : 115
        Max. Supported Pixel        : 300

        No secondary GTF timing formula supported.

Extension Flag                      : 0

Check sum                           : F8 (HEX.)

************************************************************************
EDID data (128 bytes)
************************************************************************

 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 41  9: 0c 10: 09 11: 00 12: 40 13: e2 14: 01 15: 00
16: 08 17: 0c 18: 01 19: 03 20: 6c 21: 28 22: 1e 23: ba
24: e9 25: 61 26: e8 27: a4 28: 52 29: 49 30: 98 31: 24
32: 0f 33: 48 34: 4c 35: ad 36: cf 37: 80 38: 61 39: 59
40: 45 41: 59 42: 81 43: 8f 44: a9 45: 4f 46: a9 47: 59
48: c1 49: 4f 50: d1 51: 4f 52: 01 53: 01 54: 04 55: 74
56: 80 57: d0 58: 72 59: a0 60: 3c 61: 50 62: 90 63: e0
64: 13 65: 00 66: 88 67: 26 68: 11 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 48 97: 49 98: 4c 99: 49 100: 50 101: 53 102: 20 103: 32
104: 30 105: 31 106: 42 107: 34 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 73 117: 1e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: f8
```

DDC Instructions

Go to cover page

1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect,repaired monitor the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For the monitor : Standard Version 3.0
Structure Version 1.2

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.

The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.58, 20000818)is a windows-based program, which cannot be run in MS-DOS.

Figure 1 Diskette with EDID301.EXE

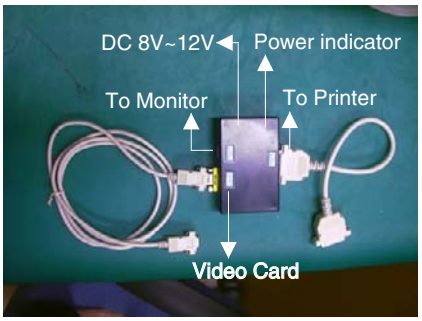
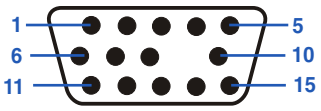


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment
1	Red video input
2	Green video input
3	Blue video input
4	Identical output - connected to pin 10
5	Salf test
6	Red video ground
7	Green video ground
8	Blue video ground
9	No pin
10	Logic ground
11	Identical output - connected to pin 10
12	Serial data line (SDA)
13	H. Sync / H + V
14	V. Sync (VCLK for DDC)
15	Data clock line (SCL)

DDC Instructions (Continued)

4. Configuration and procedure

There is no Hardware DDC (DDC IC) anymore. Main EEPROM stores all factory settings and DDC data (EDID code) which is so called Software DDC. The following section describes the connection and procedure for Software DDC application. The main EEPROM can be re-probrammed by enabling "factory memory data write" function on the DDC program (EDID301.EXE).

***** INITIALIZE ALIGNMENT BOX *****

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before re-programming DDC Data. Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as shown in Fig.3.

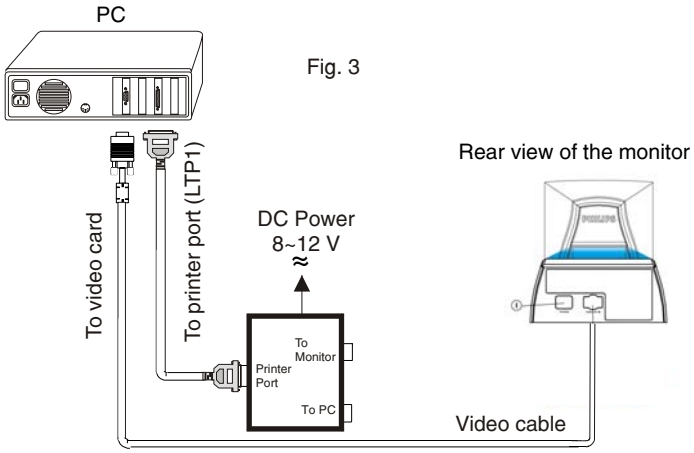


Fig. 3

Step 3: Installation of EDID301.EXE

Method 1: Start on DDC program

Start Microsoft Windows.
1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click Start, choose Run at start menu of Windows 95/98 as shown in Fig. 4.

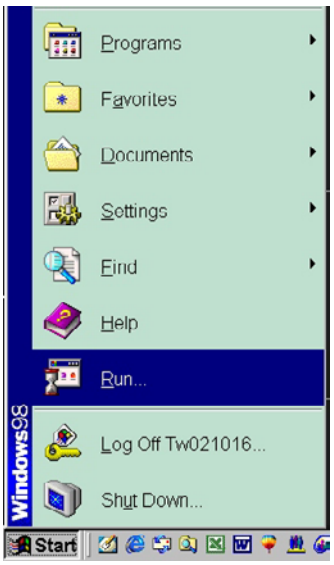


Fig. 4

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

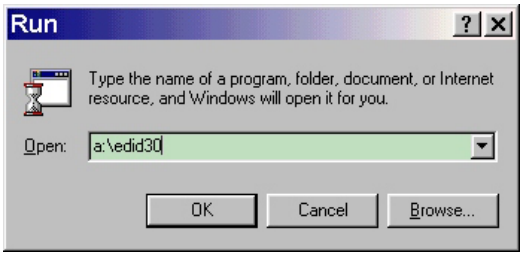


Fig. 5

4. Click **OK** button. The main menu appears (as shown in Fig. 6).
This is for initialize alignment box.

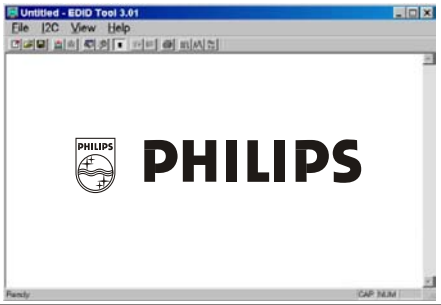


Fig. 6

Note 1: If the connection is improper, you will see the following error message (as shown in Fig. 7) before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

Fig. 7

Method 2: After create a shortcut of EDID301.EXE

: Double click EDID301 icon (as shown in Fig. 8) which is on the screen of Windows Wallpaper.
Bring up main menu of EDID301 as shown in Fig. 9.
This is for initialize alignment box.

Fig. 8

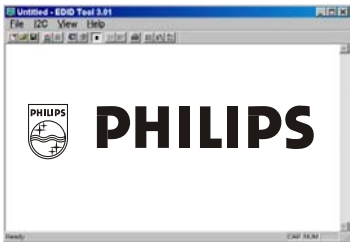


Fig. 9

Note 2: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen as below. Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.

DDC Instructions (Continued)

Re-programming EEPROM (Software DDC)

Step 1: After initialize alignment box, connecting all cables and box as shown in Fig. 10

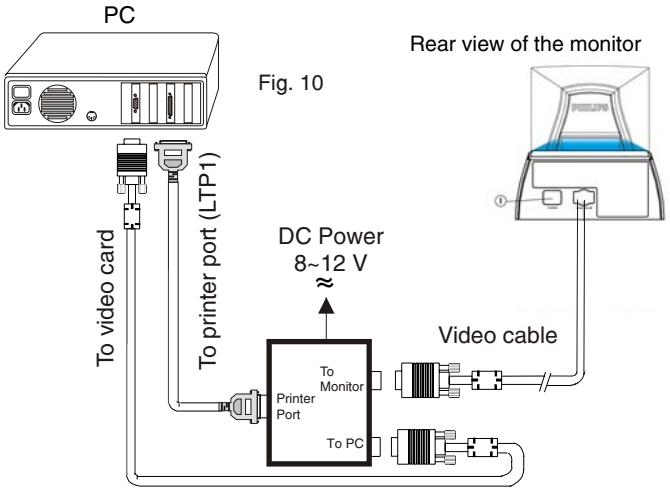


Fig. 10

Step 2: Read DDC data from monitor

1-1 Click the left key of Mouse, or hit any key on the keyboard, then the characters disappear from the screen.
1-2 Click icon as shown if Fig. 11 from the tool bar to bring up the "Configuration Setup" windows as shown in Fig. 12.

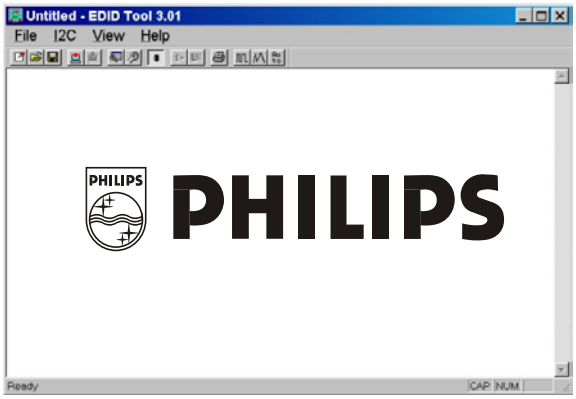


Fig. 11

2. Select the DDC2B as the communication channel.
Select "**Enable**" & fill out "**F0**" for Mapped EDID page address as shown in Fig. 12.

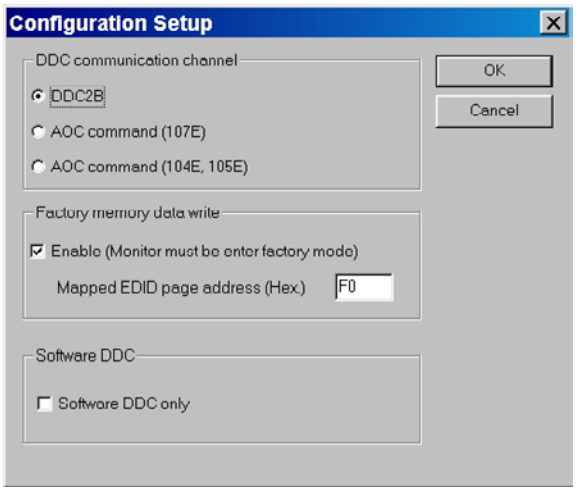


Fig. 12

3. Click OK button to confirm your selection.

4. Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.

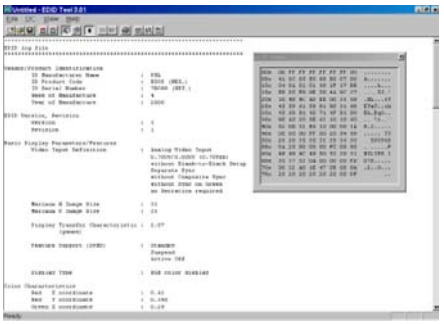


Fig. 13

Step 3: Modify DDC data (verify EDID version, week, year)

1. Click (new function) icon from the tool bar, bring up Step 1 of 9 as shown in Fig. 14 .
EDID301 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

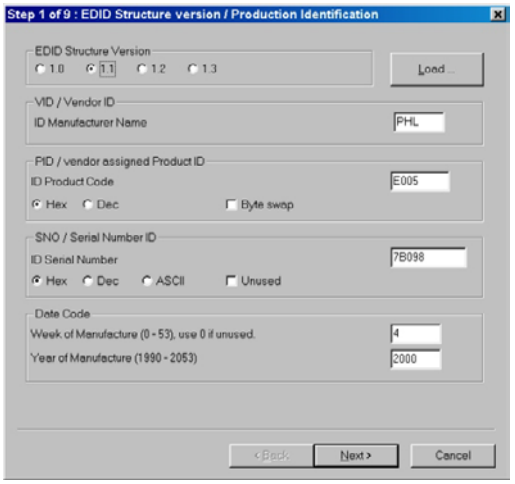


Fig. 14

Step 4: Modify DDC data (Monitor Serial No.)

1. Click **Next** till the Step 7 of 9 window appears as shown in Fig. 15.
2. Fill out the new Serial No. (for example, TY 503960, TY 123456).
3. Click **Next** till the last step window appears, then click **Finish** to exit the Step window.

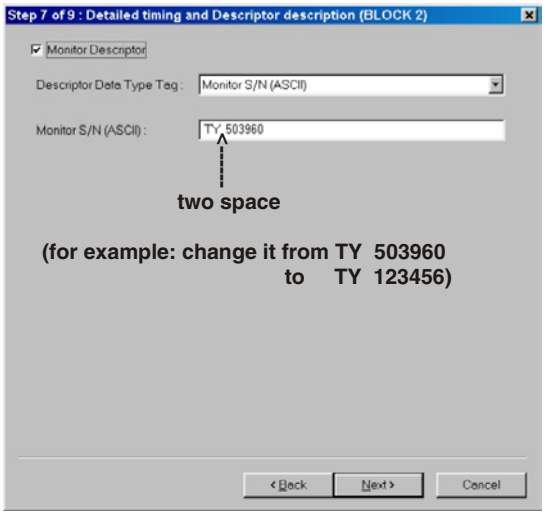
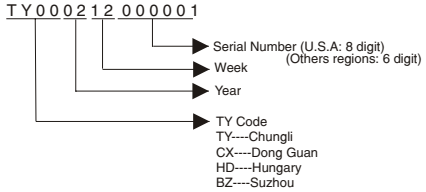


Fig. 15

Definition of Serial Number (barcode format)



DDC Instructions (Continued)

Step 5: **Configuration Setup & Enter Factory Mode ** for "write EDID data"

1. Click icon from the tool bar to bring up the Configuration Setup windows again. Then, select "Software DDC only" as shown in Fig. 16. Click "OK".

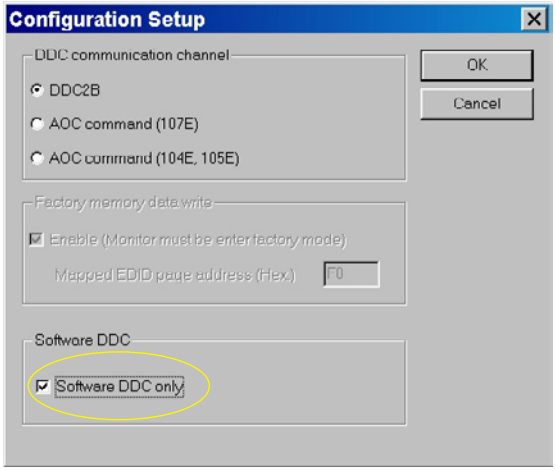


Fig. 16

If you do not select "Software DDC only", when you execute "write EDID", it will bring up an error message as below.

To access factory mode

1. Turn off monitor (don't turn off PC)
2. Press " " and " " simultaneously on the front control panel,then press " ",wait till the OSD menu with characters CM25 PLUS V0.70 20020115 (below OSD menu)" come on the screen of monitor.

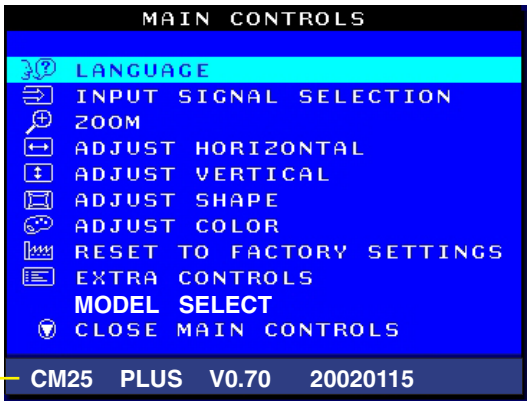


Fig. 17

If OSD menu disappears on the screen of monitor, press " " again (anytime), then the OSD menu comes on the screen again.

If you do not access "Factory mode", when you execute "write EDID", it will bring up an error message as below.

Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data. Bring up "Writing 0%~100%, ready" a progressing bar on the left down corner.
2. Click (Read EDID) to confirm it.

Step 7: Confirm Serial Number in User Mode

1. Press the button to turn off the monitor. Press the button again to turn on the monitor.
2. Press the button to bring up the OSD Main Menu.
3. Press the button to select Extra Controls, press the button to confirm your selection.
4. Confirm the Serial Number "123456" is updated as shown in Fig. 18.

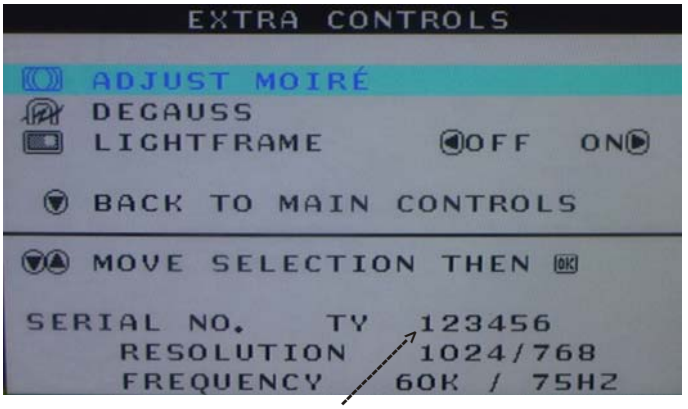


Fig. 18

Step 8: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 19.
   The file type is EDID301 file (*.ddc) which can be open in WordPad. By using WordPad, the texts of DDC data & table (128 bytes, hex code) can be modified. If DDC TEXTS & HEX Table are completely correct, it can be saved as .ddc flie to re-load it into EEPROM for DDC Data application.

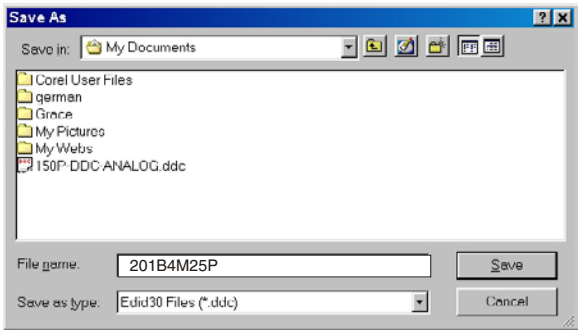


Fig. 19

2. Click **Save**.

DDC Instructions (Continued)

Step 9: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig. 20.
3. Click **Open**.
4. Access "Factory Mode" and enable "Software DDC only" as shown in Fig. 17 & Fig. 16.
5. Write EDID (click).

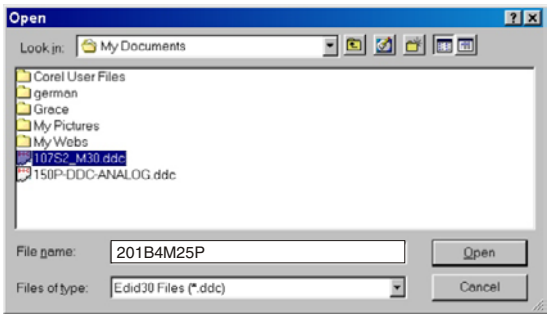


Fig. 20

Step 10: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 21.
(EDID Tool 3.01)

Fig. 21

Note1 : In User Mode: Read DDC data only

Before read EDID code, please confirm that the **Software DDC only was disabled** as shown in Fig. 22.

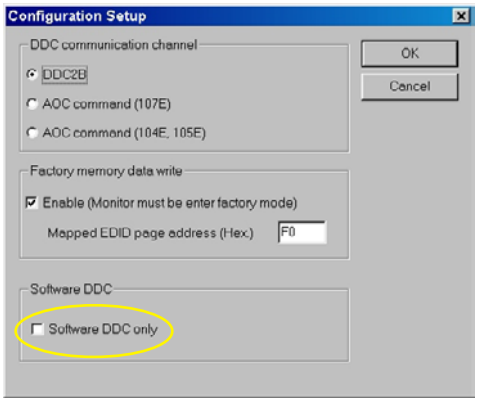


Fig. 22

If you do not disable "Software DDC only", when you execute "read EDID", it will bring up an error message as below.

Note 2 : In Factory Mode: Read/Write DDC data

Before Read/Write EDID code, please confirm that the **Software DDC only was enabled** as shown in Fig. 23.

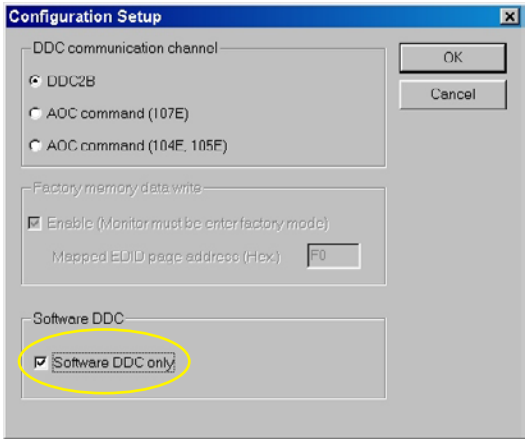


Fig. 23

Electrical Adjustments

Go to cover page

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 115kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 34 factory-preset modes as below .

31.469 KHz/59.941 Hz, 640 X 480
31.468 KHz/70.084 Hz, 720 X 400
37.5 KHz/75 Hz, 640 X 480
37.861 KHz/72.810 Hz, 640 X 480
37.879 KHz/60.317 Hz, 800 X 600
43.269 KHz/85.008 Hz, 640 X 480
46.875 KHz/75.000 Hz, 8 00 X 600
48.077 KHz/72.188 Hz, 800 X 600
48.363 KHz/60.004Hz, 1024X 768
49.722 KHz/74.546Hz, 832 X 624
50.628 KHz/100.10 Hz, 640 X 480
53.674 KHz/85.061 Hz, 800 X 600
56.476 KHz/70.069 Hz,1024X 768
60.023KHz/75.029Hz, 1024 X 768
63.923 KHz/100.00 Hz, 800 X 600
63.981KHz/60.020Hz, 1280 X 1024
68.677KHz/84.997Hz, 1024 X 768
68.681KHz/74.979Hz, 1152 X 870
75.000KHz/60.000 Hz, 1600 X 1200
79.976KHz/75.024 Hz, 1280 X 1024
81.250 KHz/65.000 Hz, 1600 X 1200
83.640 KHz/59.999 Hz, 1792 X 1344
86.333 KHz/59.995 Hz, 1856X 1392
87.500 KHz/70.000 Hz, 1600 X 1200
90.000 KHz/60.000 Hz, 1920 X 1440
91.146 KHz/85.024 Hz, 1280 X 1024
93.750 KHz/75.000Hz, 1600 X 1200
106.250KHz/85.00 Hz, 1600 X 1200
106.270KHz/74.997Hz, 1792 X 1344
112.5KHz/75Hz, 1920 X 1440
109.950KHz/75Hz, 1856 X 1392
114.048KHz/81Hz, 1792 X 1344
115.236KHz/106.7Hz, 1280 X 1024
115.238KHz/91.758Hz,1600 X 1200

0.2 With normal VGA card:
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.3 AC/DC Measurement:
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".
Power input: 110V AC

1. B+ supply voltage (3157) 210Vdc

- Apply a video signal in the 1024 x 768 with 68.7 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Pre-set trimming potentiometer 3157(B+) and 3698(EHT) in mid-position.
- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).
- Connect a dc voltmeter between the joint of capacitor 2154 and ground (common ground).
- Set the B+ trimming potentiometer 3157 so that the reading on the dc voltmeter is 210 V +/- 0.2 Vdc.

2. High-voltage EHT (3698)

- Apply a video signal in the 1024 x 768 with 68.7 kHz/85Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Turn off the power.
- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the EHT trimming potentiometer 3661 so that the "high-voltage voltmeter" reads 27.0 kV +/- 0.2 kV .

- Turn off the power.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.

3. Monitor the following auxiliary voltages.

SOURCE ACROSS C2362	+	8.0V +/- 0.5 VDC
SOURCE ACROSS C2143	+	5.0V +/- 0.5 VDC
SOURCE ACROSS C2361	+	12.0V +/- 0.5 VDC
SOURCE ACROSS C2134	+	15.0V +/- 1.0 VDC
SOURCE ACROSS C2137	-	15.0V +/- 1.0 VDC
SOURCE ACROSS D6148	+	6.3V +/- 0.5 VDC
SOURCE ACROSS C2131	+	210.0V +/- 1.5 VDC
SOURCE ACROSS C2133	+	82.7V +/- 2.0 VDC

4. General conditions for alignment

4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.

4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.

4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

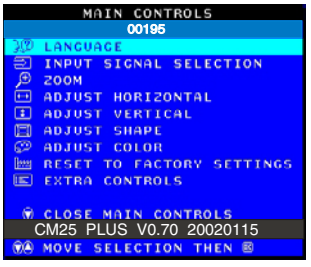
Northern hemisphere : H=0, V=450+/-50 mG, Z=0
Southern hemisphere : H=0, V=-450+/-50 mG, Z=0
Equatorial Support : H=0, V=0 mG, Z=0

4.4 All voltages are to be measured or applied with respect to ground.
Note: Do not use heatsink as ground.

4.5 Adjust function controls " ◀▶ " to center position except for contrast control which should be set to MAX.

5. To access factory mode:

- Turn off monitor (don't turn off PC)
- Press " ◀ " and " ▶ " simultaneously on the front control panel, then press " ⏻ ",wait till the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.



- If OSD menu disappears on the screen of monitor, press " ⏭ " again (anytime), then the OSD menu comes on the screen again.
- using " ▲▼ " : to select OSD menu.
  ◀▶ : to increase or decrease the setting.

- Using " ⏭ " to confirm the selection.

Electrical Adjustments (Continued)

Go to cover page

7. Alignment of Vg2 cut-off point, white tracking

Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)
VG2 [(screen), at the bottom of the L.O.T.].

7.1 Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode, select the "full white pattern" (sizes 306 x 230 mm).

* Use color-analyzer (Minolta CA-100) to adjust R/G/B cutoff and Gain.

OSD R/G/B cut-off and R/G/B gain can be accessed (for Philips CRT), with initial data:

9300 °K
R cutoff = 62%, R gain = 71% (I^2 C)
G cutoff = 62%, G gain = 71% (I^2 C)
B cutoff = 62%, B gain = 71% (I^2 C)
6500 °K
R cutoff = 62%, R gain = 71% (I^2 C)
G cutoff = 62%, G gain = 71% (I^2 C)
B cutoff = 62%, B gain = 71% (I^2 C)
5500 °K
R cutoff = 62%, R gain = 71% (I^2 C)
G cutoff = 62%, G gain = 71% (I^2 C)
B cutoff = 62%, B gain = 71% (I^2 C)

Brightness = 50%, Sub-Contrast = 88%, ABL = 58% (I^2 C)

Step 1: To access factory mode

- Turn off monitor (don't turn off PC)
- Press " ◀▶ and " ⏻ " simultaneously on the front control panel, then press " OSD ", wait till the OSD menu with characters CM25 PLUS V0.70 20020115 (below OSD menu)" comes on the screen of monitor as shown in Fig. 2.1.

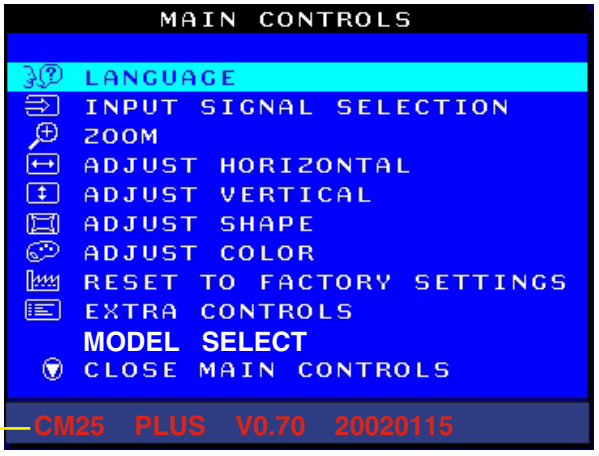


Fig. 2.1

- If OSD menu disappears on the screen of monitor, press " OSD " again (anytime), then the OSD menu comes on the screen again.
- Using " ▼ " to select CM25 PLUS V0.70 20020115.
- Press " OSD " button to access/confirm the selection. Bring up the "function adjustment" as shown in Fig. 2.2.
- Press " ▼ " or " ▲ " button for function selection as shown in Fig. 2.2.
- Press " OSD " button to access/confirm each item selection (The cursor indicator will be changed from yellow colour to red colour.)
- Using " ▶ " or " ◀ " : to increase or decrease the value.

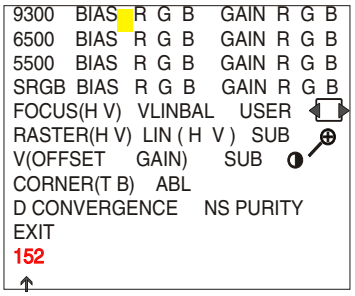


Fig. 2.2

(for example: 152 is value of "BIAS R")

BIAS R G B : R(red) G(green) B(blue) cutoff
GAIN R G B : R(red) G(green) B(blue) gain
V FOCUS : Vertical Focus
VLIN BAL : Vertical Linearity Balance
USER : Horizontal size range
RASTER H: Horizontal DC (raster) Shift
RASTER V: Vertical DC (raster) Shift
SUB : Zoom range
SUB : Sub Contrast
V OFFSET : Vertical offset
V GAIN : Vertical Gain
ABL : Auto Beam Limit
T CORNER: Corner Correction of TOP
B CORNER: Corner Correction of BOTTOM
D CONVERGENCE
NS PURITY

7.2 Connect the video input, set brightness control at center, and contrast control at maximum

7.3 Set R,G,B bias at 90 for CPT CRT ,at 160 for BGDCCRT,SDI CRT
R,G,B gain at 180 9300°k ,6500°K & 5500°K (EEPROM preload value)
ABL at 150 9300°k ,6500°K & 5500°K (EEPROM preload value)
SUB-CON at 225 (EEPROM preload value)

7.4 Adjust 9300K Color:
Adjust R3517 until raster appear to reach 0.1 FL
With color analyzer CA 100,
set R,G,B cut-off x=0.283, y=0.297, Y=0.10

7.5 Set R,G,B gain Y= 40+/- 1FL, x=0.283, y=0.297

7.6 Repeat 7.4,7.5 until RGB three guns get x=0.283, y=0.297, readings on low Y=0.10+/-0.05FL and high Y=40+/-1FL brightness of 9300.

7.7 Adjust 6500K color:
With color analyzer CA 100,
set R,G,B cut-off x=0.313, y=0.329, Y=0.10FL

7.8 Adjust 5500K color:
With color analyzer CA 100,
set R,G,B cut-off x=0.332, y=0.347, Y=0.10FL

7.9 Apply full white pattern of 9300 mode, adjust ABL to reach 32 +/- 1FL(at 9300 high brightness of R/G/B gain, contrast at 100%)

7.10 Check full white at contrast and brightness at minimum

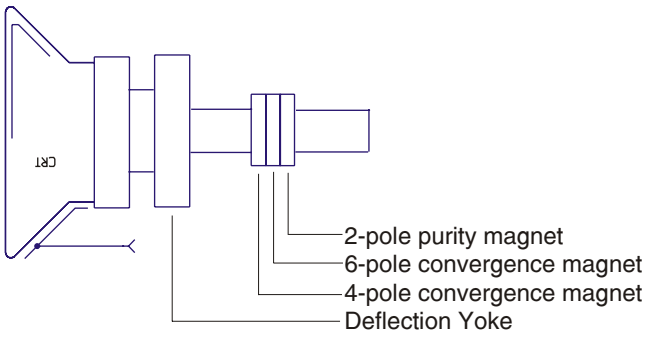
Electrical Adjustments (Continued)

8. Focus adjustment

Apply a signal of " @ " character. at 64 kHz/60 Hz mode set the brightness to mid-position , contrast to max - position and adjust the focus for optimal sharpness in the area within 2/3 from the screen center.

9. Loading DDC code

The DDC HEX data should be written into the EEPROM (7803) by EDID301.EXE Program(3138 106 10103) and software DDC Alignment kits (4822 310 11184).



10. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.

11. Static convergence

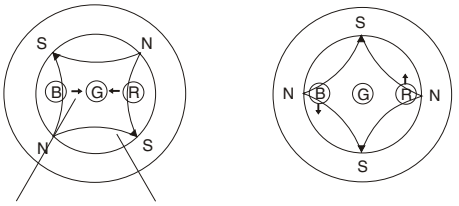
Introduction

Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet.
The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other.
The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting

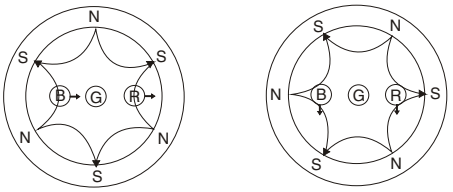
- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.

4-pole — Beam motion producced by the 4-pole convergence magnet



Beam displacement direction — Magnetic flux lines

6-pole — Beam motion producced by the 6- pole convergence magnet



Safety test requirements

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both **Hipot** and **Ground Continuity** testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, Service center shall use DC voltage.

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute.No breakdown during the test.

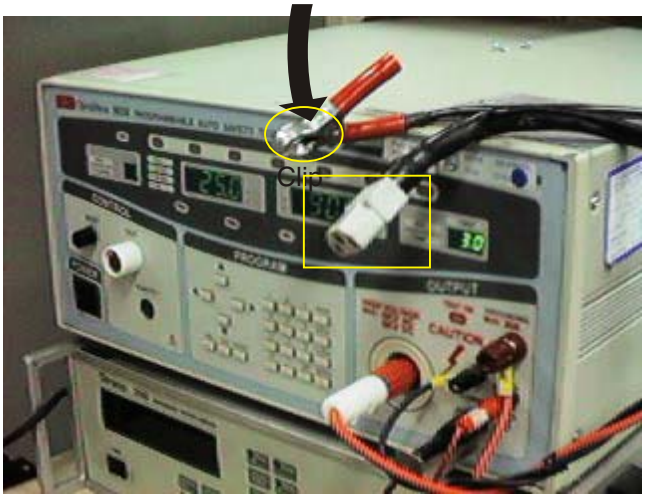
2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

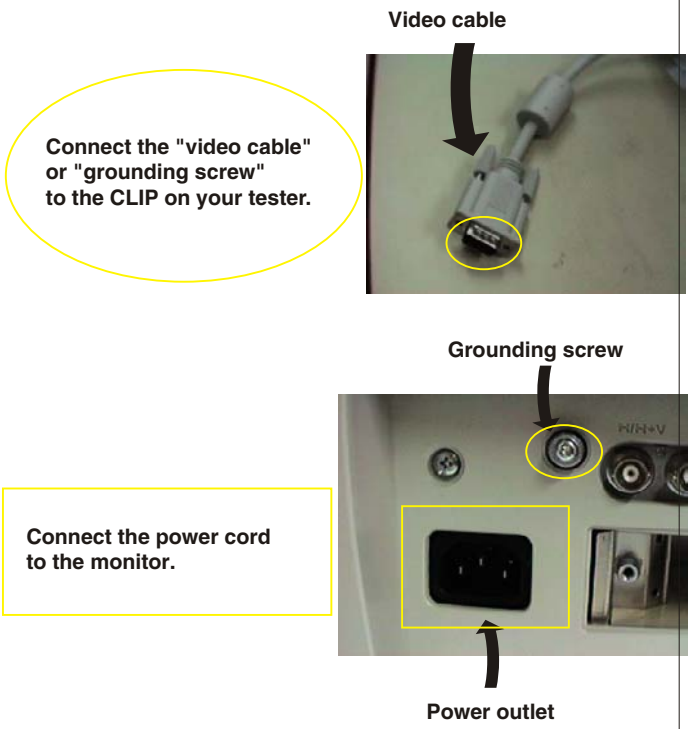
3. Equipments and Connection

3.1. Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)

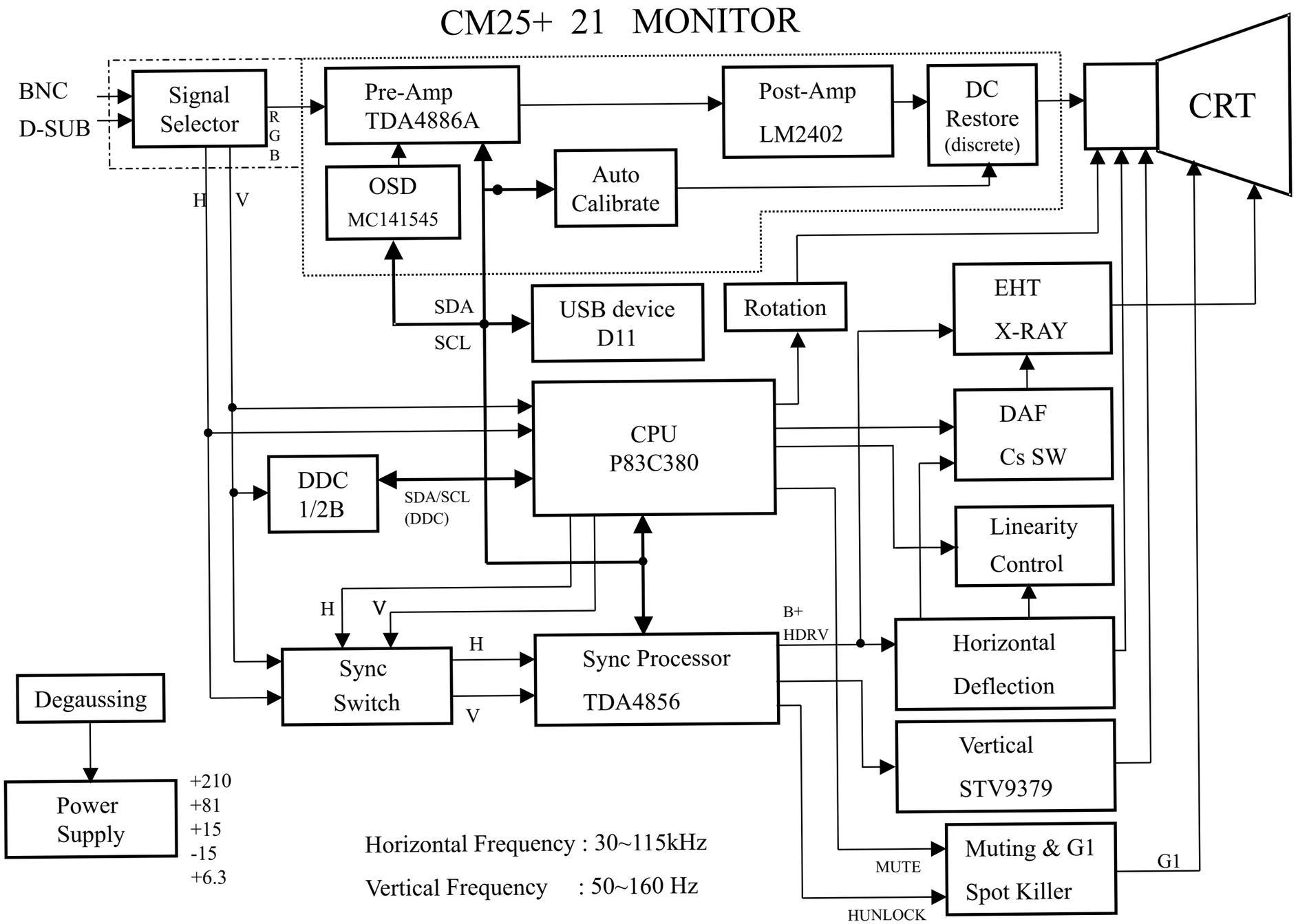


(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

FUNCTION BLOCK OF COCA+ 201B4 M25P



Go to cover page

Video Schematic Diagram

A2

VIDEO BOARD

SB-55891 x6

PB-55901

TO TERMINAL BD 1003

7701 TDA4887

FBL, OSD1, OSD2, OSD3, CLI, Vin1, Vp, Vin2, GND, Vin3, HFB, SDA, LIM, F_R1, Vout1, Vp1, F_R2, Vout2, Vp2, F_R3, Vout3, Vp3, GNDX, SCL

7705 LM2402

Vin2, Vin1, Vin3, VBB, VCC, GND2, GND1, GND3, Vout2, Vout1, Vout3, R, B, G

VIDEO AMP.

WT6803 7781

VSDA, VCD, RP, VDDA, HELB, SS, MOSI, SCK, VHLB, VCC, GND, R, G, B, FBKG, HTONE

7806 PCF8574P

P0 P1 P2 P3 P4 P5 P6 P7, VDD, VSS, A0 A1 A2, INT, SCL SDA

7802-A/B/C/D 74HC4066

7801-A/B TL072CP

(AUTO CALIBRATE)

BW_I_uP, BW_O_DAC

JFE63041

AQUADAG

(PURE FLAT)

1711-G1710-I

R, G, B

TO LOT

TO MAIN PANEL BOARD 8003

1705-A

-15V, GND, +5V, +6V, +8, +12, +80V, +180

TO MAIN PANEL BOARD 8002

1706-1

SCL, GND, SDA, GND, HFB, CLB, CONTRAST_ADJ, GND, BRI, BW_I_uP, BW_O_DAC

MODEL / ITEM	202P4	109P4	201B4
* 6762	BZV85-C51	BZX79-C30	BZX79-C30

NOTES:

@ STANDS FOR CHIP COMPONENT

1703 A13 3762 C15 F014 F16
1705-A D16 3763 C15 F015 G16
1706-1 H16 3764 C14 F016 G16
1710-I A13 3765 G15 F017 H16
1711-G A13 3766 I14 F018 H16
1712 C16 3767 I14 F019 H16
2701 B2 3768 I14 F020 I16
2702 B3 3769 J14 F021 I16
2704 A10 3781 F3 F022 I16
2705 A11 3782 E3 F023 I16
2706 C12 3783 E3 F024 J16
2707 A5 3784 F3 F025 J16
2708 B6 3785 F3 F026 J16
2709 B3 3786 G3 F027 J16
2710 A9 3787 F3 F028 A13
2720 B9 3788 G3 F029 A13
2721 B2 3789 G3 F030 A13
2722 B3 3790 F5 F031 A13
2724 B10 3791 G5 F032 B13
2725 C11 3792 F6 F033 B14
2726 C12 3801 I3 F034 B14
2727 B6 3802 I3 F035 B14
2736 F3 3803 J3 F036 B14
2740 C9 3804 J3 F037 B15
2741 C2 3805 J5 F038 C16
2742 C3 3806 J5
2744 C10 3807 I6
2745 D11 3808 J6
2746 C13 3809 J7
2747 C3 3811 G8
2748 C6 3812 F9
2749 D7 3813 G9
2750 D8 3814 G8
2751 D8 3815 H9
2752 D8 3816 I8
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2756 H4 3822 F9
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2763 D14 3832 F10
2764 C15 3833 G10
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2799 E3 5783 F4
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2814 I8 6724 C11
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2821 F9 6726 C6
2822 G9 6731 D2
2831 F10 6732 D1
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3714 A3 6813 H8
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3733 C3 7801-B I7
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3735 B5 7802-B I11
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3738 D8 7803 H9
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3742 C2 7807 J11
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3744 C9 7809 G9
3745 C10 7810 G10
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3754 C9 F008 D16
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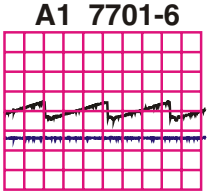
3761 C16 F013 F16

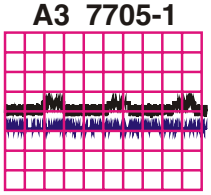
Waveform (A)

A1 7701-6



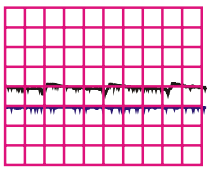
1 V/div AC
10 uS/div

A3 7705-1



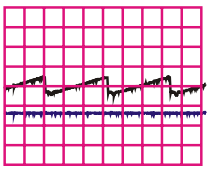
50 V/div AC
5 mS/div

A7 7782-B



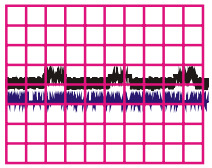
0.5 V/div AC
10 uS/div

A1 7701-8



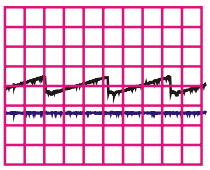
1 V/div AC
10 uS/div

A3 7705-5



50 V/div AC
5 mS/div

A1 7701-10



1 V/div AC
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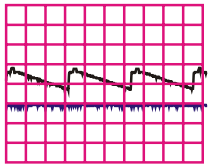
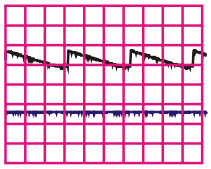
A4 1710-12



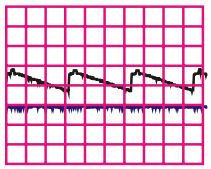
50 V/div AC
10 uS/div

A2 7705-9



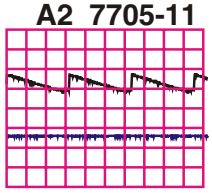
1 V/div AC
10 uS/div

A4 1710-9



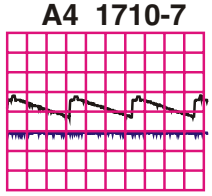
50 V/div AC
10 uS/div

A2 7705-11



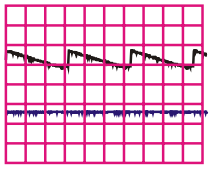
1 V/div AC
10 uS/div

A4 1710-7



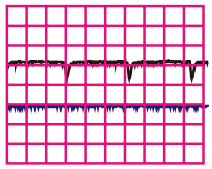
50 V/div AC
10 uS/div

A2 7705-8



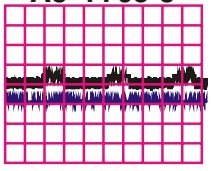
1 V/div AC
10 uS/div

A5 7781-2



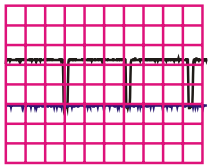
0.5 V/div AC
10 uS/div

A3 7705-3



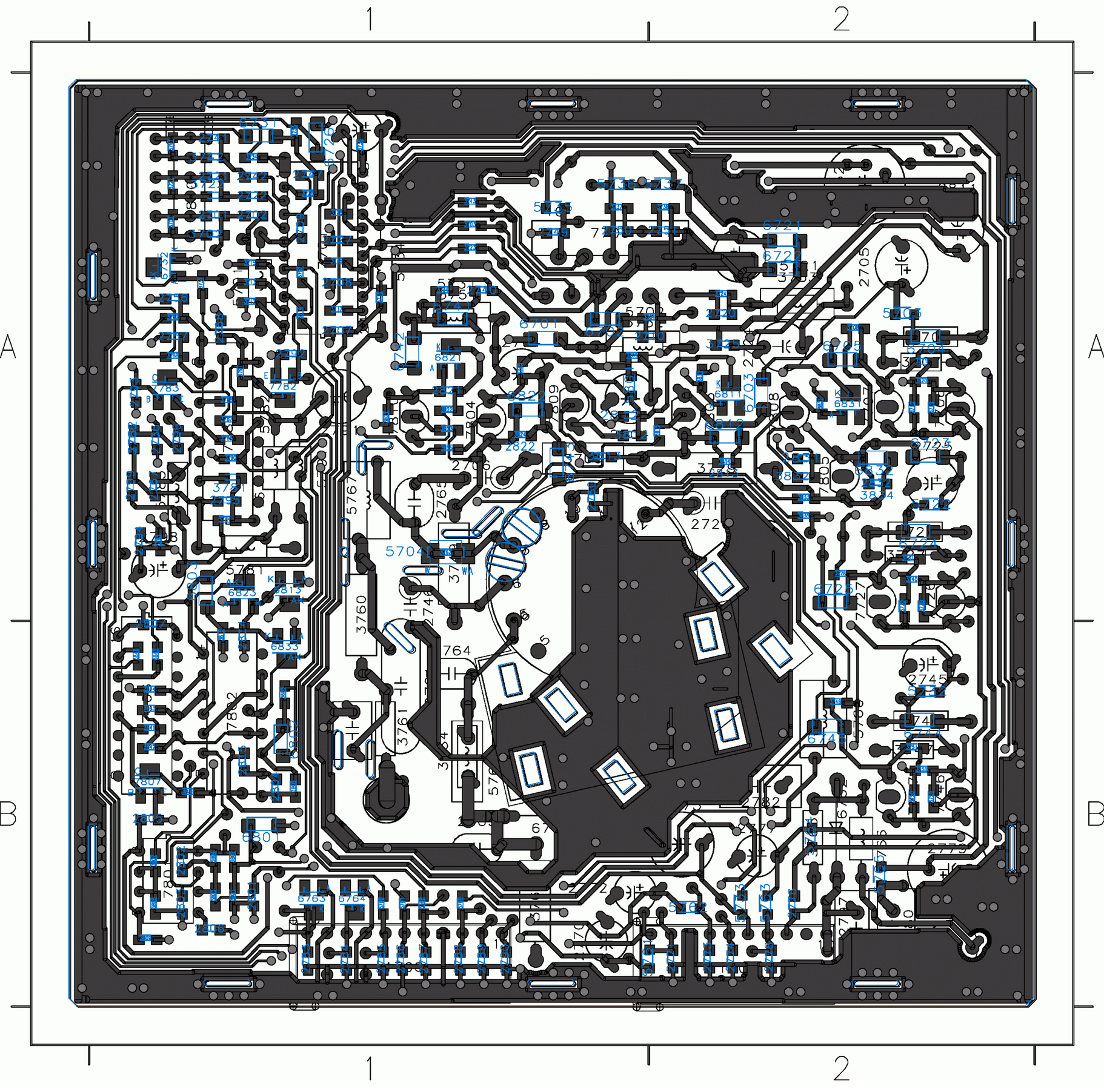
50 V/div AC
5 mS/div

A6 7781-5



2 V/div AC
10 uS/div

PCB (Video)


1
2
A
B
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5705
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3794
3795
3796
3797
3798
3799
3800
3801
3802
3803
3804
3805
3806
3807

GRID REF	BOARD LABEL	SIDE
1703	A2	B
1705	B2	B
1706	B1	B
1710	A1	B
1711	A1	B
1712	B1	B
2704	A1	B
2705	A2	B
2706	A1	B
2724	A2	B
2725	A2	B
2726	A2	B
2744	A1	B
2745	B2	B
2746	A1	B
2748	A1	B
2752	A2	B
2753	A2	B
2761	B1	B
2762	B1	B
2763	B1	B
2764	B1	B
2765	A1	B
2770	B1	B
2772	B1	B
2775	B2	B
2777	B2	B
2779	B2	B
2780	B2	B
2781	B2	B
2782	B2	B
2791	A1	B
2797	B2	B
2798	A1	B
2811	A2	B
3706	A2	B
3707	A2	B
3709	A1	B
3726	A2	B
3727	A2	B
3729	A2	B
3746	B2	B
3747	B2	B
3749	A1	B
3752	A1	B
3753	A2	B
3754	A1	B
3760	A1	B
3761	B1	B
3763	B1	B
3764	B1	B
3765	B2	B
5701	A1	B
5702	A1	B
5721	A2	B
5731	A1	B
5734	A1	B
5760	B2	B
5766	B2	B
5767	A1	B
5768	B1	B
5781	A1	B
5782	A1	B
5783	A1	B
5791	A1	B
6761	B1	B
6762	B2	B
7701	A1	B
7705	A1	B
7706	A2	B
7707	A2	B
7726	A2	B
7727	A2	B
7746	B2	B
7747	B2	B
7781	A1	B
7801	B1	B
7802	B1	B
7803	A2	B
7804	A1	B
7805	A2	B
7806	B1	B
7808	A2	B
7809	A1	B
7810	A1	B
8701	A1	B

GRID REF	BOARD LABEL	SIDE
1703	B6	B
1705	B5	B
1706	A5	B
1710	B6	B
1711	B6	B
1712	A5	B
2704	B6	B
2705	C7	B
2706	B6	B
2724	B7	B
2725	C6	B
2726	B6	B
2744	B7	B
2745	C6	B
2746	A6	B
2748	A7	B
2752	B7	B
2753	B7	B
2761	A6	B
2762	A6	B
2763	B5	B
2764	A6	B
2765	A6	B
2770	B5	B
2772	B5	B
2775	B5	B
2777	B5	B
2779	C5	B
2780	C5	B
2781	C5	B
2782	B5	B
2791	A6	B
2797	C5	B
2798	A6	B
2811	C7	B
3706	C7	B
3707	C7	B
3709	B6	B
3726	C6	B
3727	C6	B
3729	B6	B
3746	C6	B
3747	C6	B
3749	A6	B
3752	B7	B
3753	B7	B
3754	B7	B
3760	A6	B
3761	A6	B
3763	B5	B
3764	A6	B
3765	B5	B
5701	A7	B
5702	B7	B
5721	B7	B
5731	B7	B
5734	A7	B
5760	C6	B
5766	C5	B
5767	A6	B
5768	B6	B
5781	A6	B
5782	A6	B
5783	A6	B
5791	A6	B
6761	B5	B
6762	B5	B
7701	A7	B
7705	B7	B
7706	C7	B
7707	C7	B
7726	C6	B
7727	C6	B
7746	C6	B
7747	C6	B
7781	A6	B
7801	A5	B
7802	A6	B
7803	B6	B
7804	B6	B
7805	B6	B
7806	A6	B
7808	B6	B
7809	B7	B
7810	A6	B
8701	A7	B

GRID REF	BOARD LABEL	SIDE
2701	A1	A
2702	A1	A
2707	A1	A
2708	A1	A
2709	A1	A
2710	A2	A
2720	A2	A
2721	A1	A
2722	A1	A
2727	A1	A
2736	A1	A
2740	A1	A
2741	A1	A
2742	A1	A
2747	A1	A
2749	A1	A
2750	A1	A
2751	A2	A
2756	A1	A
2757	A1	A
2760	A1	A
2766	A1	A
2767	A1	A
2768	A1	A
2771	B2	A
2773	B2	A
2774	B2	A
2776	B2	A
2778	B2	A
2783	B1	A
2784	B1	A
2785	B1	A
2786	B1	A
2787	B1	A
2788	B1	A
2789	B1	A
2790	B1	A
2792	A1	A
2793	A1	A
2794	A1	A
2795	A1	A
2796	A1	A
2799	A1	A
2801	B1	A
2802	B1	A
2803	B1	A
2804	B1	A
2805	B1	A
2806	B1	A
2807	B1	A
2812	A1	A
2813	A2	A
2814	B1	A
2815	B1	A
2821	A1	A
2822	A1	A
2831	A2	A
2832	A2	A
3701	A1	A
3702	A1	A
3703	A1	A
3704	A2	A
3705	A1	A
3708	A2	A
3710	A2	A
3711	A2	A
3712	A1	A
3713	A1	A
3714	A1	A
3715	A1	A
3716	A1	A
3717	A1	A
3718	A1	A
3719	A2	A
3720	A2	A
3721	A1	A
3722	A1	A
3723	A1	A
3724	A2	A
3725	A2	A
3728	A2	A
3730	A2	A
3731	A2	A
3732	A1	A
3733	A1	A
3734	A1	A
3735	A1	A
3736	A1	A
3737	A1	A
3738	A2	A
3739	A2	A
3740	A2	A
3741	A1	A
3742	A1	A
3743	A1	A
3744	A1	A
3745	A1	A
3748	B2	A
3750	B2	A
3751	B2	A
3755	A1	A
3758	B2	A
3759	B2	A
3762	A1	A
3766	B1	A
3767	B1	A
3768	B1	A
3769	B1	A
3781	A1	A
3782	A1	A
3783	A1	A
3784	A1	A
3785	A1	A
3786	A1	A
3787	A1	A
3788	A1	A
3789	A1	A
3790	A1	A
3791	A1	A
3792	A1	A
3801	B1	A
3802	B1	A
3803	B1	A
3804	B1	A
3805	B1	A
3806	B1	A
3807	B1	A
3808	B1	A
3809	B1	A
3811	A2	A
3812	A1	A
3813	A1	A
3814	A2	A
3815	A2	A
3816	B1	A
3821	A1	A
3822	A1	A
3823	A1	A
3824	A1	A
3825	A1	A
3831	A2	A
3832	A2	A
3833	A2	A
3834	A2	A
3835	A2	A
3836	B1	A
3841	B1	A
3842	B1	A
3843	B1	A
3844	B1	A
3845	B1	A
3846	B1	A
5703	A2	A
5704	A1	A
5722	A2	A
5732	B2	A
5733	B2	A
5735	A1	A
5736	A1	A
5737	A2	A
5761	B1	A
5762	B2	A
5763	B2	A
5764	B2	A
5765	B2	A
5801	A1	A
6701	A1	A
6702	A1	A
6703	A2	A
6704	A2	A
6705	A2	A
6721	A2	A
6722	A2	A
6723	A2	A
6724	A2	A
6725	A2	A
6726	A1	A
6731	A1	A
6732	A1	A
6741	A1	A
6742	A1	A
6743	A1	A
6744	B2	A
6745	B2	A
6763	B1	A
6764	B1	A
6801	B1	A
6802	B1	A
6803	A1	A
6811	A2	A
6812	A2	A
6813	A1	A
6821	A1	A
6822	A1	A
6823	A1	A
6831	A2	A
6832	A2	A
6833	B1	A
7782	A1	A
7783	A1	A
7807	B1	A

GRID REF	BOARD LABEL	SIDE
2701	A7	A
2702	A7	A
2707	A7	A
2708	A7	A
2709	A7	A
2710	B7	A
2720	B7	A
2721	A7	A
2722	A7	A
2727	A7	A
2736	A6	A
2740	B7	A
2741	A7	A
2742	A7	A
2747	A7	A
2749	B7	A
2750	B7	A
2751	B7	A
2756	A7	A
2757	A7	A
2760	B6	A
2766	A6	A
2767	A6	A
2768	A7	A
2771	B5	A
2773	B5	A
2774	B5	A
2776	B5	A
2778	B5	A
2783	A5	A
2784	A5	A
2785	A5	A
2786	A5	A
2787	A5	A
2788	B5	A
2789	B5	A
2790	B5	A
2792	A7	A
2793	A7	A
2794	A6	A
2795	A6	A
2796	A6	A
2799	A6	A
2801	A5	A
2802	A5	A
2803	A5	A
2804	A6	A
2805	A5	A
2806	A5	A
2807	A6	A
2812	B6	A
2813	B6	A
2814	A6	A
2815	A6	A
2821	A7	A
2822	B6	A
2831	B6	A
2832	C6	A
3701	A7	A
3702	A7	A
3703	B7	A
3704	B7	A
3705	B7	A
3708	C7	A
3710	C7	A
3711	C7	A
3712	A7	A
3713	A7	A
3714	A7	A
3715	A7	A
3716	A7	A
3717	A7	A
3719	C7	A
3720	C7	A
3721	A7	A
3722	A7	A
3723	B7	A
3724	B7	A
3725	B7	A
3728	B6	A
3730	C6	A
3731	C6	A
3732	A7	A
3733	A7	A
3734	A7	A
3735	A7	A
3736	A7	A
3737	B7	A
3738	B7	A
3739	C6	A
3740	C6	A
3741	A7	A
3742	A7	A
3743	B7	A
3744	A7	A
3745	B7	A
3748	B6	A
3750	C5	A
3751	C6	A
3755	A7	A
3758	C6	A
3759	C5	A
3762	A6	A
3766	A5	A
3767	A5	A
3768	A5	A
3769	B5	A
3781	A6	A
3782	A6	A
3783	A6	A
3784	A6	A
3785	A6	A
3786	A7	A
3787	A6	A
3788	A7	A
3789	A7	A
3790	A6	A
3791	A7	A
3792	A7	A
3801	A5	A
3802	A5	A
3803	A5	A
3804	A5	A
3805	A6	A
3806	A6	A
3807	A5	A
3808	A5	A
3809	A5	A
3811	B7	A
3812	B6	A
3813	B6	A
3814	B6	A
3815	B6	A
3816	A6	A
3821	A6	A
3822	A7	A
3823	A6	A
3824	B6	A
3825	A6	A
3831	B7	A
3832	B6	A
3833	B6	A
3834	C6	A
3835	B6	A
3836	A6	A
3841	A6	A
3842	A6	A
3843	A6	A
3844	A6	A
3845	A6	A
3846	A6	A
5703	C7	A
5704	A6	A
5722	C6	A
5732	C6	A
5733	B5	A
5735	B7	A
5736	B7	A
5737	B7	A
5761	B5	A
5762	B5	A
5763	B5	A
5764	B5	A
5765	C5	A
5801	B7	A
6701	B7	A
6702	B7	A
6703	B7	A
6704	C7	A
6705	C7	A
6721	B7	A
6722	B7	A
6723	C6	A
6724	C6	A
6725	B6	A
6726	A7	A
6731	A7	A
6732	A7	A
6741	A7	A
6742	A7	A
6743	B6	A
6744	C6	A
6745	B6	A
6763	A5	A
6764	A5	A
6801	A5	A
6802	A6	A
6803	A6	A
6811	B7	A
6812	B6	A
6813	A6	A
6821	A7	A
6822	B7	A
6823	A6	A
6831	C7	A
6832	C6	A
6833	A6	A
7782	A7	A
7783	A7	A
7807	A6	A

Terminal Schematic Digram

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A1

4001 BNC

TO INTERFACE CABLE

H I/P F023 — 1001 BNC750 — F001 — 3001 2K2 (R)
V I/P F024 — 1002 BNC750 — F002 — 3004 2K2 (R)
R I/P F025 — 1004 BNC750 — F003 — 3006 47R — 3007 75R 1% — BZX84-C15 6001 — 2006 (R)
G I/P F026 — 1005 BNC750 — F004 — 3008 47R — 3009 75R 1% — BZX84-C15 6002 — 2009 (R)
B I/P F027 — 1007 BNC750 — F005 — 3010 47R — 3011 75R 1% — BZX84-C15 6003 — 2012 (R)
F028 F029 F042

+5 — 5001 4u7 — 2001 220u

7001 AN5870K

2003 47u	1 RIN1	RGB1-12V 30	+12 — 5002 4u7 — 2002 220u
2004 47u	2 GNDR	ROUT 29	2023 220u → TO VIDEO BD 8701 (WHITE) F006 R O/P
2005 47u	3 RIN2	RGB2-12V 28	2025 220u → F007 GND
2007 47u	4 GSYNC-5V	GOUT 27	F030 GND
2011 47u	5 GIN1	RGB1-GND 26	2027 220u → F008 B O/P
2013 47u	6 GNDG	GSYNC 25	F031 GND
3012 470R	7 GIN2	RGB2-GND 24	JFE638H 1003
3013 470R	8 RGB-5V	BOUT 23	
3015 470R	9 BIN1	SW 22	TO MAIN BD 8001
	10 GNDB	SYNCIN 21 — 2008 100n — 2010 100n	1006 JFE63962
	11 BIN2	HDET 20	F009 +5PC
	12 HV-HSEP-SW-5V	HOUT 19	F010 SCL_DDC
	13 HIN1	VOUT 18	F032 GND
	14 HIN2	HV-HSEP-SE-GND 17	F011 SDA_DDC
	15 VIN1	VIN2 16	F012 BNC_DSUB
			F013 H_H+V
			F014 VIn
			F015 GND
			F016 +5
			F017 +12
			(WHITE)

2020 100n — 2019 100n — 2018 10p — 3014 470R — 2021 10p

2031 22p — 2032 22p — 2033 22p — 2034 22p — 2035 100n — 2036 100n

H-sync — 3018 2K2 (R)

TO INTERFACE CABLE 1008 1226-15SF

F034 F060 F037 F021 F045 F038 F043 F041 F018 F019 F020 F022 F039 F040

3016 47R — 3017 75R 1% — BZX84-C15 6004 — 2014 (R)
3019 47R — 3020 75R 1% — BZX84-C15 6005 — 2015 (R)
3021 47R — 3022 75R 1% — BZX84-C15 6006 — 2016 (R)

5003 4u7 — 2017 100n

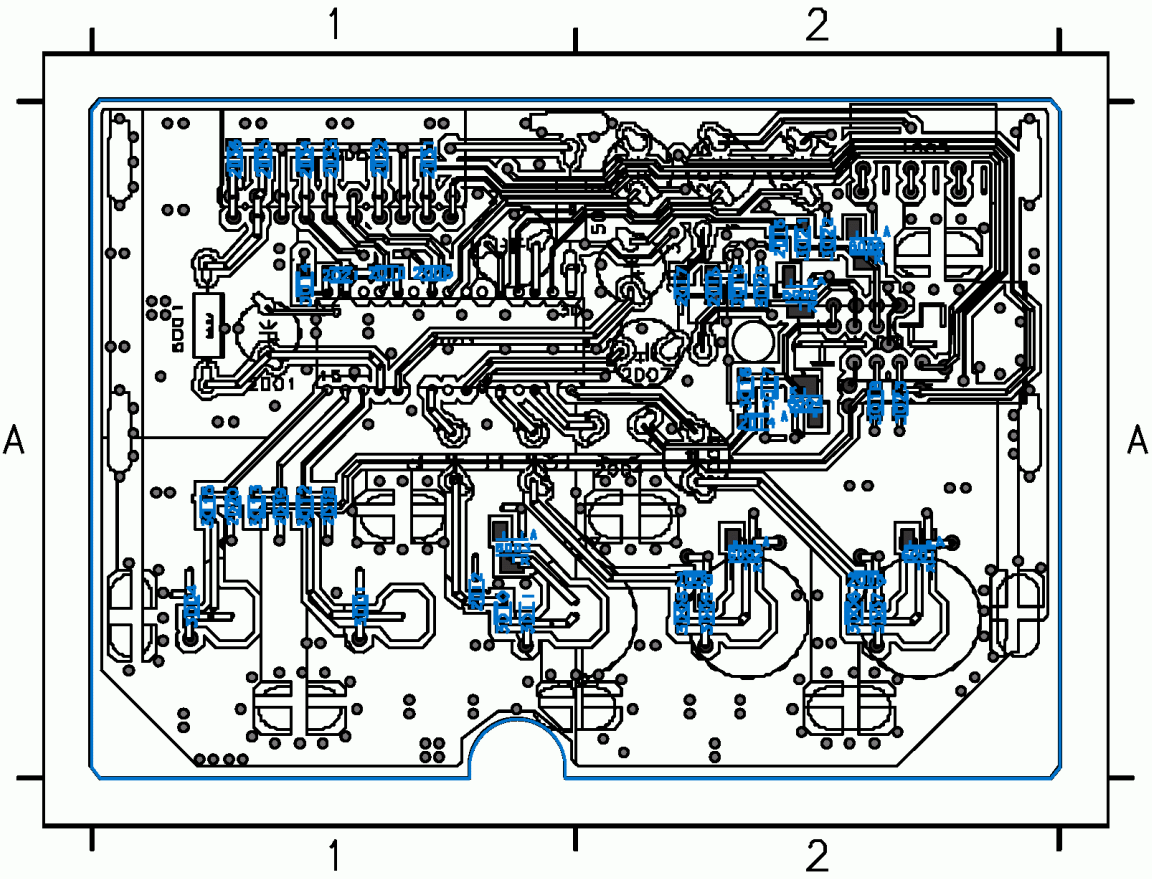
V-sync — 3023 2K2 (R)

NOTES:
(R) STAND FOR RESERVED (NOT INSERTED).
Ⓒ STAND FOR CHIP COMPONENTS.

CN: TYT12-					
CLASS NO.	TERMINAL		3138 178 61041		--------
	CM25+109P40/00C				
02-01-23	3				
NAME S.Lin/Y.S.Tseng	SUPERS	1	10	130 - 1	A3
TY	CHECK	DATE 02-01-23	© Philips Electronics N.V.		

PCB (A1)

1001 A2 F039 F3
1002 B2 F040 G3
1003 C11 F041 G2
1004 B2 F042 D2
1005 C2 F043 G2
1006 D11 F045 F2
1007 C2 F060 F2
1008 E2 F061 B11
2001 B6
2002 B8
2003 B5
2004 B5
2005 C5
2006 C4
2007 C5
2008 D8
2009 C4
2010 D8
2011 D5
2012 D4
2013 D5
2014 F4
2015 F4
2016 G4
2017 G4
2018 E6
2019 E6
2020 E6
2021 F8
2023 B10
2025 B10
2027 C10
2031 E10
2032 E10
2033 E10
2034 E10
2035 E11
2036 E11
3001 A4
3004 B4
3006 B3
3007 C3
3008 C3
3009 C3
3010 D3
3011 D3
3012 E5
3013 E5
3014 F7
3015 E5
3016 E4
3017 F3
3018 E4
3019 F4
3020 F3
3021 F3
3022 G3
3023 H4
4001 A2
5001 A6
5002 A8
5003 G3
6001 C3
6002 C3
6003 D3
6004 F3
6005 F3
6006 G3
7001 B7
F001 A3
F002 B3
F003 B3
F004 C3
F005 D3
F006 B11
F007 B11
F008 C11
F009 D11
F010 D11
F011 D11
F012 D11
F013 D11
F014 E11
F015 E11
F016 E11
F017 E11
F018 F3
F019 F3
F020 F3
F021 F2
F022 F3
F023 A2
F024 B2
F025 B2
F026 B2
F027 C2
F028 C2
F029 D2
F030 C11
F031 C11
F032 D11
F034 F2
F037 F2
F038 F2



GRID REF	BOARD LABEL	SIDE
2006	A2	A
2008	A1	A
2009	A2	A
2010	A1	A
2012	A1	A
2014	A2	A
2015	A2	A
2016	A2	A
2017	A2	A
2018	A1	A
2019	A1	A
2020	A1	A
2021	A1	A
2031	A1	A
2032	A1	A
2033	A1	A
2034	A1	A
2035	A1	A
2036	A1	A
3001	A1	A
3004	A1	A
3006	A2	A
3007	A2	A
3008	A2	A
3009	A2	A
3010	A1	A
3011	A1	A
3012	A1	A
3013	A1	A
3014	A1	A
3015	A1	A
3016	A2	A
3017	A2	A
3018	A2	A
3019	A2	A
3020	A2	A
3021	A2	A
3022	A2	A
3023	A2	A
6001	A2	A
6002	A2	A
6003	A1	A
6004	A2	A
6005	A2	A
6006	A2	A

GRID REF	BOARD LABEL	SIDE
1001	A1	B
1002	A1	B
1003	A2	B
1004	A2	B
1005	A2	B
1006	A1	B
1007	A1	B
1008	A2	B
2001	A1	B
2002	A1	B
2003	A2	B
2004	A2	B
2005	A1	B
2007	A2	B
2011	A1	B
2013	A2	B
2023	A2	B
2025	A2	B
2027	A2	B
4001	A2	B
5001	A1	B
5002	A2	B
5003	A2	B

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Deflection Schematic Diagram

B

TO VIDEO BOARD 1706

TO VIDEO BOARD 1201

TO TERMINAL BD 1706

TO CONTROL B.D 8891

MAIN BOARD
SB: 55401

SYNC PROCESSOR
R421-R460

7421
TDA4856

7404
HEF4053BP

REGULATOR
R360-R364

7363
L7812CV

7364
L7805CV

POWER SUPPLY (SHEET 2)

BUFFER
R391-R399

DDC
R491-R499

(HARDWARE DDC)

(FOR USB ONLY)

EE PROM
7306
M24C16-BN6

7301
WT 62P2

BLANKING
SPOT KILLER
R461-R490

ROTATION
R586-R599

H_DRIVE

H_UNLOCK

MUTE

RASTER_SHIFT

ABL_C

H_LIN

SYNC_SEL

SUSPEND

SCL_DDC

SDA_DDC

OFF

VERTICAL OUTPUT
R566-R585

H-YOKE

LINEARITY COIL

HOR. FREQ. CHOKE

HOR. DRIVE
VALUE

HORI. OP
R601-R640

DAF AMP.
R601-R620

V-DAF AMP.

RASTER SHIFT

EHT PWM
R651-R670

EHT GENERATOR
R671-R699

MODEL / ITEM	202P4	109P4	201B4
3441	56K	39K	39K
3505	1R2	1R5	1R5
6518	6VUZ5C	5TUZ5C	5FUZ5C
7502	2NC5804	2NC5404	2NC5404
3581	220R	470R	180R
2608	None	4N7	None
2504	3N4	None	4N3
2509	220P	220P	None

MODEL / ITEM	202P4	109P4	201B4
2601	150P	100P	None
2602	150P	47P	180P
2604	None	100P	None
2605	None	220P	None
3602	None	10K	None
3635	None	3K9	None
3604	None	33K	None
6601	None	BY584	None
6603	None	BY584	None
9601	Yes	None	Yes

MODEL / ITEM	202P4	109P4	201B4
2434	1N6	5N6	6N6
3432	464R	590R	549R

MODEL / ITEM	202P4	109P4	201B4
2550	None	150N	None
2563	82N	None	100N
2564	82N	68N	120N
2620	33N	None	None
2621	68N	47N	None
2622	120N	68N	120N
2623	270N	180N	180N
2624	510N	360N	470N
2625	1u	820N	820N
2634	1u5	1u5	1u8
2642	330N	None	None
3318	10K	None	None
3620	100K	None	None
3621	10K	None	None
7620	IRF640	None	None
7627	MUN2211	None	None

MODEL / ITEM	202P4	109P4	201B4
2543	100u/35V	2700u/25V	3300u/25V
2682	100u/35V	2700u/25V	3300u/25V

DMPS (cpu)	2120	
ON	H	H
SUSPEND	L	L
OFF	L	L

1301 M9 1302 J9 1311 N3 1501-A C19 1501-B C19 1501-C B18 1501-D C18 1502 H16 1503 H16 2301 L7 2302 L7 2303 M7 2304 M8 2305 M9 2306 C2 2307 M9 2308 M14 2309 M15 2310 P11 2311 P11 2312 P12 2313 P12 2314 M9 2315 C9 2316 M14 2336 J13 2337 K13 2338 K13 2361 M4 2391 I2 2392 I1 2401 B4 2421 B8 2423 B7 2424 C6 2425 D7 2426 D7 2431 E7 2432 E8 2433 E9 2434 E9 2435 E9 2441 D11 2442 D12 2443 D12 2444 C13 2445 C13 2446 F13 2456 F12 2461 F9 2462 G7 2463 H9 2464 F8 2491 H6 2492 I4 2493 I5 2501 E15 2502 D15 2503 D14 2504 D16 2505 D16 2506 D17 2507 D17 2508 D18 2509 D18 2516 D21 2518 C23 2519 C22 2520 D22 2541 F15 2542 F14 2543 F16 2544 E16 2545 E16 2546 C16 2552 F19 2561 E18 2563 F19 2564 F19 2565 G19 2566 G18 2567 B16 2568 A16 2569 B15 2570 C17 2576 C17 2577 C15 2578 C17 2579 C17 2586 H13 2588 G14 2589 H14 2601 B22 2602 B22 2603 F21 2604 G21 2605 G21 2608 E23 2613 F23 2620 H17 2621 H18 2622 H19 2623 H19 2624 H20 2625 H20 2626 H21 2627 H21 2628 H18 2632 H19 2635 H21 2636 H21 2661 K16 2662 K16 2663 L16 2664 L16 2666 K16 2667 L16 2668 L18 2669 O18 2680 M17 2681 M17 2682 M16 2683 N16 2684 O22 2685 O23 2686 N23 2691 M23 2693 N23 3301 K8 3302 L8 3303 L8 3304 L9 3305 L8 3306 L8 3307 M8 3308 K10 3309 K10 3310 M8 3311 M8 3312 M8 3313 M7 3314 M7 3316 M7 3317 P9 3318 M7 3319 K11 3326 N5 3328 O4 3329 O4 3330 O6 3331 O6 3332 N12 3333 J13 3335 M12 3337 J13 3340 N12 3341 O12 3342 P11 3343 O12 3344 O12 3345 P11 3346 P12 3347 O12 3348 L12 3349 M12 3350 M12 3393 I2 3394 I2 3396 I3 3397 I3 3397 G2 3398 G2 3403 E10 3404 D7 3421 B8 3422 B6 3423 B7 3424 B7 3425 C7 3426 C7 3427 C7 3428 D13 3429 D13 3430 D13 3431 E8 3432 E8 3433 E8 3434 E9 3441 C11 3442 C11 3443 C11 3444 C11 3446 D12 3450 C13 3451 C12 3456 F17 3457 F11 3458 G12 3462 F8 3464 F7 3465 H7 3466 H7 3467 H7 3468 G9 3469 H9 3470 H9 3471 H9 3472 H10 3473 H10 3474 I9 3475 I10 3476 I10 3491 H4 3492 H5 3494 I4 3495 I4 3501 D15 3502 D15 3503 D15 3504 D14 3505 E16 3506 C16 3507 D16 3508 F12 3516 D19 3516 D19 3517 D21 3518 D21 3519 E21 3521 E21 3522 C22 3523 C22 3524 D22 3526 C22 3527 D23 3528 C23 3529 D22 3530 C24 3531 D24 3541 F14 3542 F16 3543 G16 3544 G16 3545 F18 3546 F15 3551 E18 3552 F18 3553 F19 3554 F16 3555 G18 3556 G18 3566 A14 3569 A16 3570 C14 3571 B16 3572 B15 3573 A18 3574 A17 3576 C17 3577 C15 3578 E17 3579 C17 3580 B17 3581 B18 3582 C18 3584 H15 3585 H13 3586 H13 3587 H13 3589 I14 3590 G16 3591 H15 3592 H15 3593 H16 3594 I17 3601 G21 3602 G21 3604 G22 3606 F22 3607 E22 3608 F22 3609 E23 3615 F23 3616 F23 3617 G22 3618 K16 3620 I17 3621 H18 3622 I18 3623 H18 3624 I19 3625 H19 3626 I19 3627 H20 3628 I20 3629 H20 3630 I20 3631 H21 3632 I21 3633 H22 3634 I17 3635 F22 3653 K17 3655 L16 3658 M16 3659 L16 3660 K18 3661 K18 3662 L18 3663 L17 3664 N18 3665 O17 3666 N18 3667 N17 3668 N17 3671 K19 3672 K20 3673 N24 3674 L19 3675 L19 3676 L19 3677 L20 3678 M19 3679 N19 3680 N19 3681 N19 3682 O19 3683 O21 3684 O22 3685 O19 3686 O22 3687 O23 3688 O23 3689 O23 3690 O23 3691 M23 3692 M23 3693 M24 3694 M24 3695 M24 3696 M23 3697 N23 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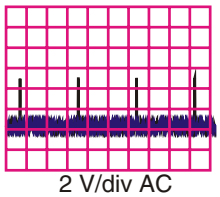
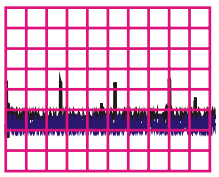
F111 D22 F112 E18 F113 E18 F114 F20 F115 G20 F116 F17 F117 G21 F118 G19 F119 M23 F120 M23 F121 K23 F122 M24 F123 M24 F124 N23 F125 M24 F126 N23 F127 L23 F128 N24 F129 N24 F130 N17 F131 K17 F132 L17 F133 N24

B1 7404-14



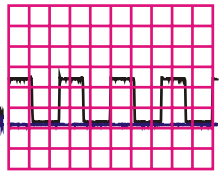
2 V/div AC
5 mS/div

B8 7421-17



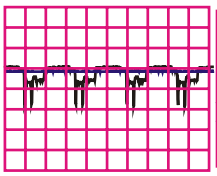
0.5 V/div AC
5 mS/div

B15 7422-E



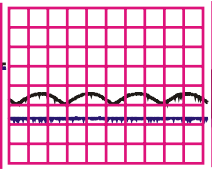
5 V/div AC
5 uS/div

B22 7502-B



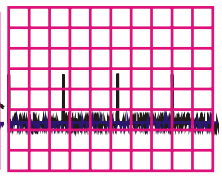
5 V/div AC
5 uS/div

B30 7543-B



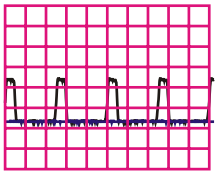
100 V/div AC
5 uS/div

B38 7301-33



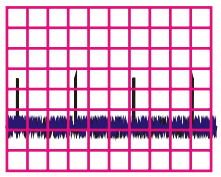
2 V/div AC
5 mS/div

B47 7672-D



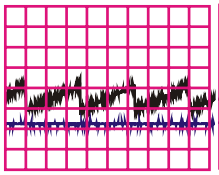
100 V/div AC
5 uS/div

B2 7404-13



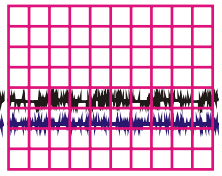
2 V/div AC
5 mS/div

B9 7421-24



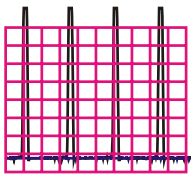
2 V/div AC
5 mS/div

B16 7566-B



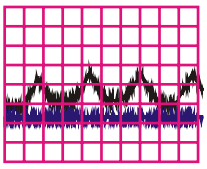
10 V/div AC
5 mS/div

B23 7502-C



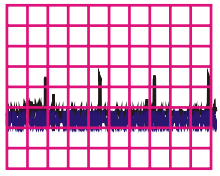
100 V/div AC
5 uS/div

B31 5601-4



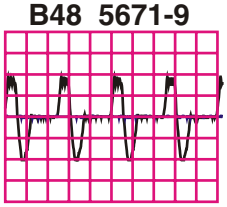
100 V/div AC
5 mS/div

B39 7301-34



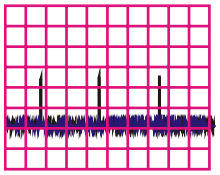
0.1 V/div AC
5 mS/div

B48 5671-9



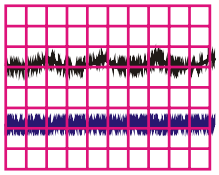
100 V/div AC
5 uS/div

B3 7404-12



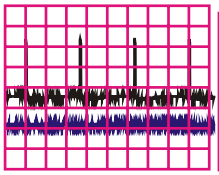
2 V/div AC
5 mS/div

B10 7421-11



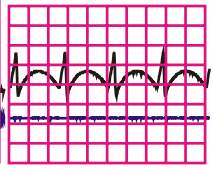
1 V/div AC
5 mS/div

B17 7567-6



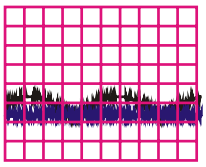
10 V/div AC
5 mS/div

B24 5503-5



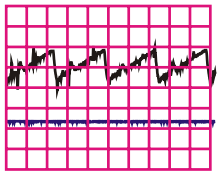
50 V/div AC
5 uS/div

B32 7622-11



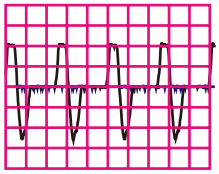
20 V/div AC
5 uS/div

B42 7651-2



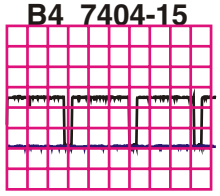
0.5 V/div AC
5 uS/div

B49 567-3



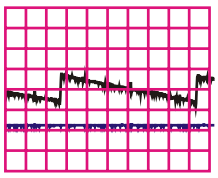
100 V/div AC
5 uS/div

B4 7404-15



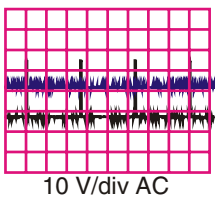
0.2 V/div AC
10 uS/div

B11 7421-12



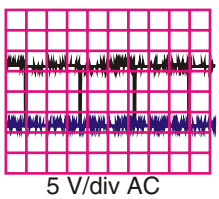
0.5 V/div AC
2 mS/div

B18 7567-3



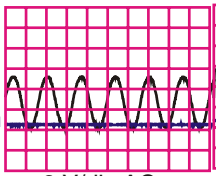
10 V/div AC
5 mS/div

B25 7461-C



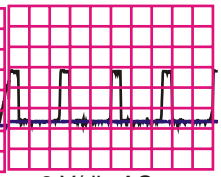
5 V/div AC
5 mS/div

B34 7301-8



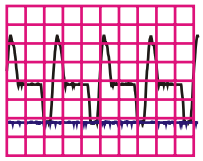
2 V/div AC
50 uS/div

B43 7651-1



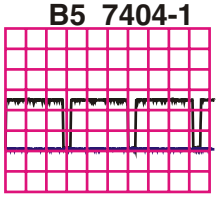
2 V/div AC
5 uS/div

B50 5671-1



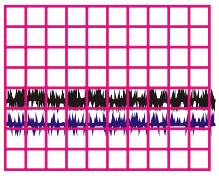
100 V/div AC
5 uS/div

B5 7404-1



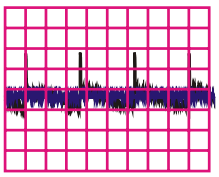
0.2 V/div AC
10 uS/div

B12 7421-32



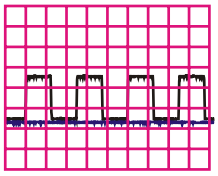
5 V/div AC
5 mS/div

B19 7567-5



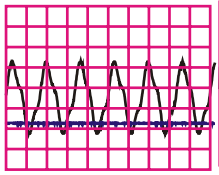
20 V/div AC
5 mS/div

B27 7425-E



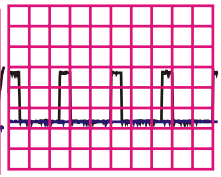
5 V/div AC
5 uS/div

B35 7301-9



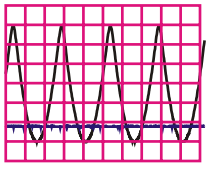
2 V/div AC
50 uS/div

B44 7651-10



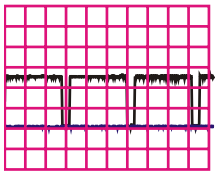
5 V/div AC
5 uS/div

B51 5671-12



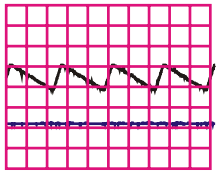
100 V/div AC
5 uS/div

B6 7404-2



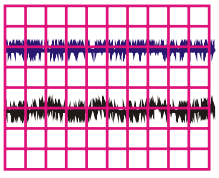
0.2 V/div AC
10 uS/div

B13 7421-29



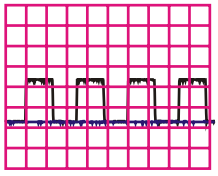
2 V/div AC
5 uS/div

B20 7567-4



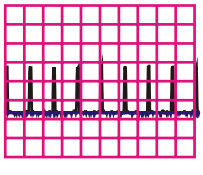
5 V/div AC
5 mS/div

B28 7541-D



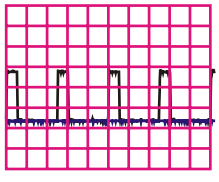
100 V/div AC
5 uS/div

B36 7301-40



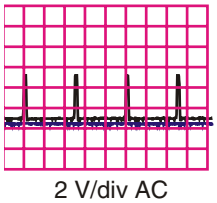
2 V/div AC
10 uS/div

B45 7671-G



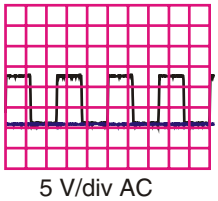
5 V/div AC
5 uS/div

B7 7421-16



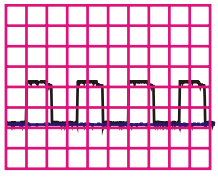
2 V/div AC
5 uS/div

B14 7422-B



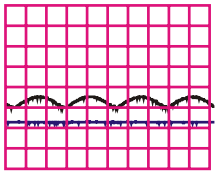
5 V/div AC
5 US/div

B21 5501-5



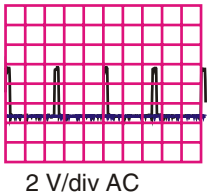
50 V/div AC
5 uS/div

B29 7543-C



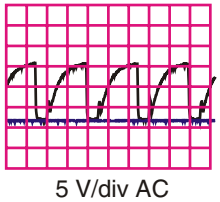
100 V/div AC
5 uS/div

B37 7301-39



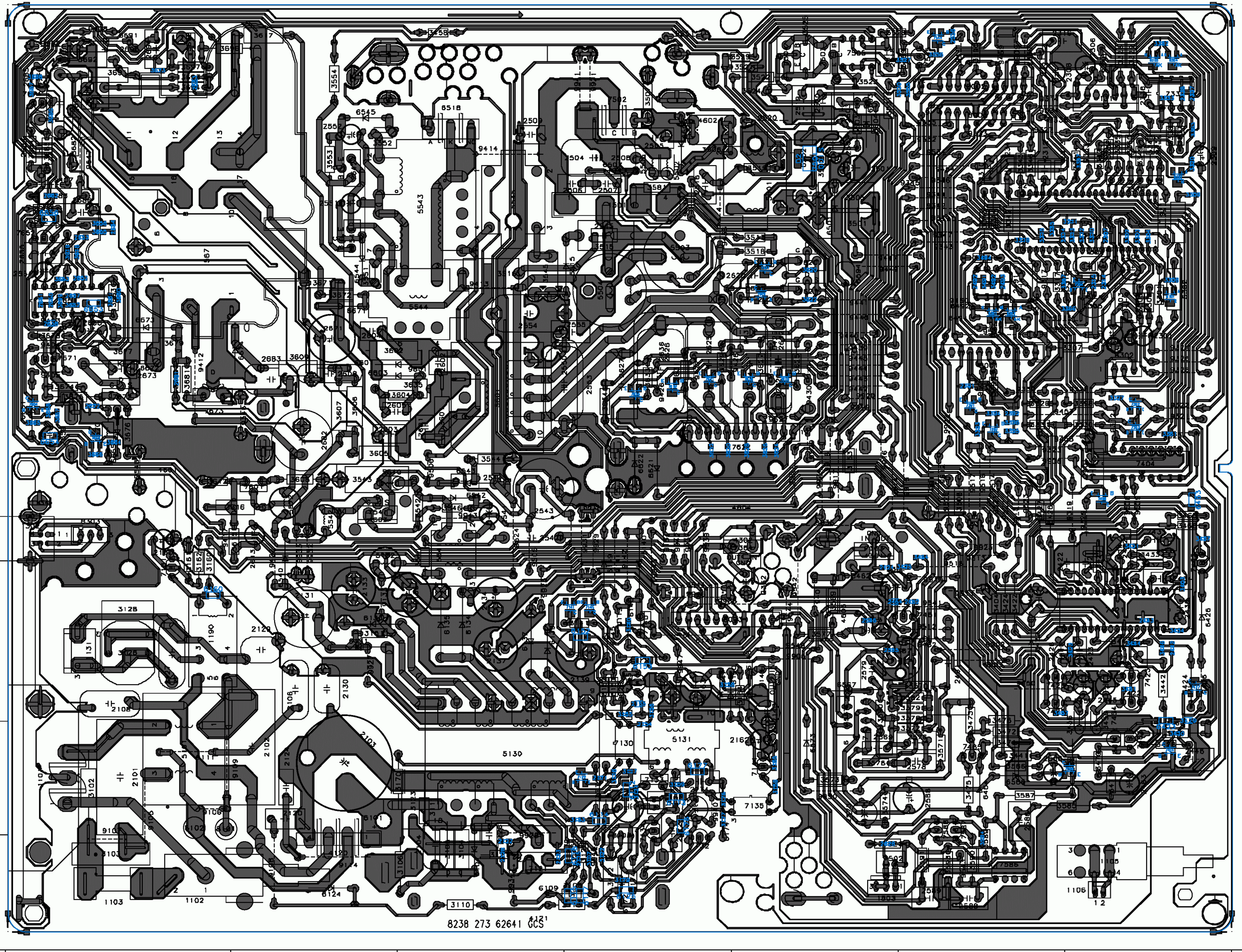
2 V/div AC
5 uS/div

B46 7671-D



5 V/div AC
5 uS/div

PCB (B, C)



GRID REF	BOARD LABEL	SIDE
1101	E1	B
1102	E1	B
1103	E1	B
1105	E7	B
1106	E7	B
1107	E4	B
1131	D1	B
1134	C1	B
1190	D1	B
1301	A7	B
1302	C1	B
1311	A7	B
1501	A4	B
1502	E5	B
1503	E5	B
2101	E1	B
2102	D2	B
2103	D2	B
2104	E3	B
2106	D2	B
2108	D1	B
2111	E4	B
2120	E2	B
2124	D2	B
2126	E3	B
2127	D1	B
2129	D2	B
2130	D2	B
2131	C2	B
2133	C2	B
2134	D3	B
2135	C3	B
2137	D3	B
2139	D4	B
2143	D5	B
2160	C1	B
2162	D5	B
2163	D4	B
2172	E4	B
2173	E4	B
2174	E4	B
2301	B7	B
2302	B7	B
2303	B7	B
2304	A7	B
2305	B7	B
2306	A7	B
2308	A7	B
2309	A7	B
2310	A6	B
2311	A6	B
2312	A6	B
2313	A6	B
2316	A6	B
2336	A7	B
2361	C5	B
2362	C5	B
2401	C7	B
2421	C7	B
2422	C6	B
2423	D7	B
2425	C6	B
2426	D6	B
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2432	C7	B
2433	C7	B
2434	C7	B
2435	D7	B
2441	D7	B
2445	D7	B
2446	D7	B
2456	D7	B
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2506	A4	B
2507	A4	B
2508	A4	B
2509	A3	B
2515	A4	B
2516	A4	B
2518	A5	B
2519	A5	B
2520	A5	B
2541	C3	B
2542	C3	B
2543	C3	B
2544	C3	B
2550	B4	B
2551	A2	B
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6492	B6	B
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7364	C5	B
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8003	D5	B
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8103	E4	B
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9943	C3	B
9944	C4	B
9945	C4	B
9946	C4	B
9947	D4	B
9948	E4	B
9951	A4	B
9952	A1	B

GRID REF	BOARD LABEL	SIDE
2115	E3	A
2122	E3	A
2123	E3	A
2128	E3	A
2154	D3	A
2155	D3	A
2171	E3	A
2307	B6	A
2314	B6	A
2315	B6	A
2337	A6	A
2338	A6	A
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2663	A1	A
2672	C1	A
2681	C1	A
3107	E3	A
3109	E4	A
3116	E3	A
3117	E3	A
3122	E3	A
3124	E3	A
3140	D3	A
3155	D3	A
3156	D3	A
3158	D4	A
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3163	E3	A
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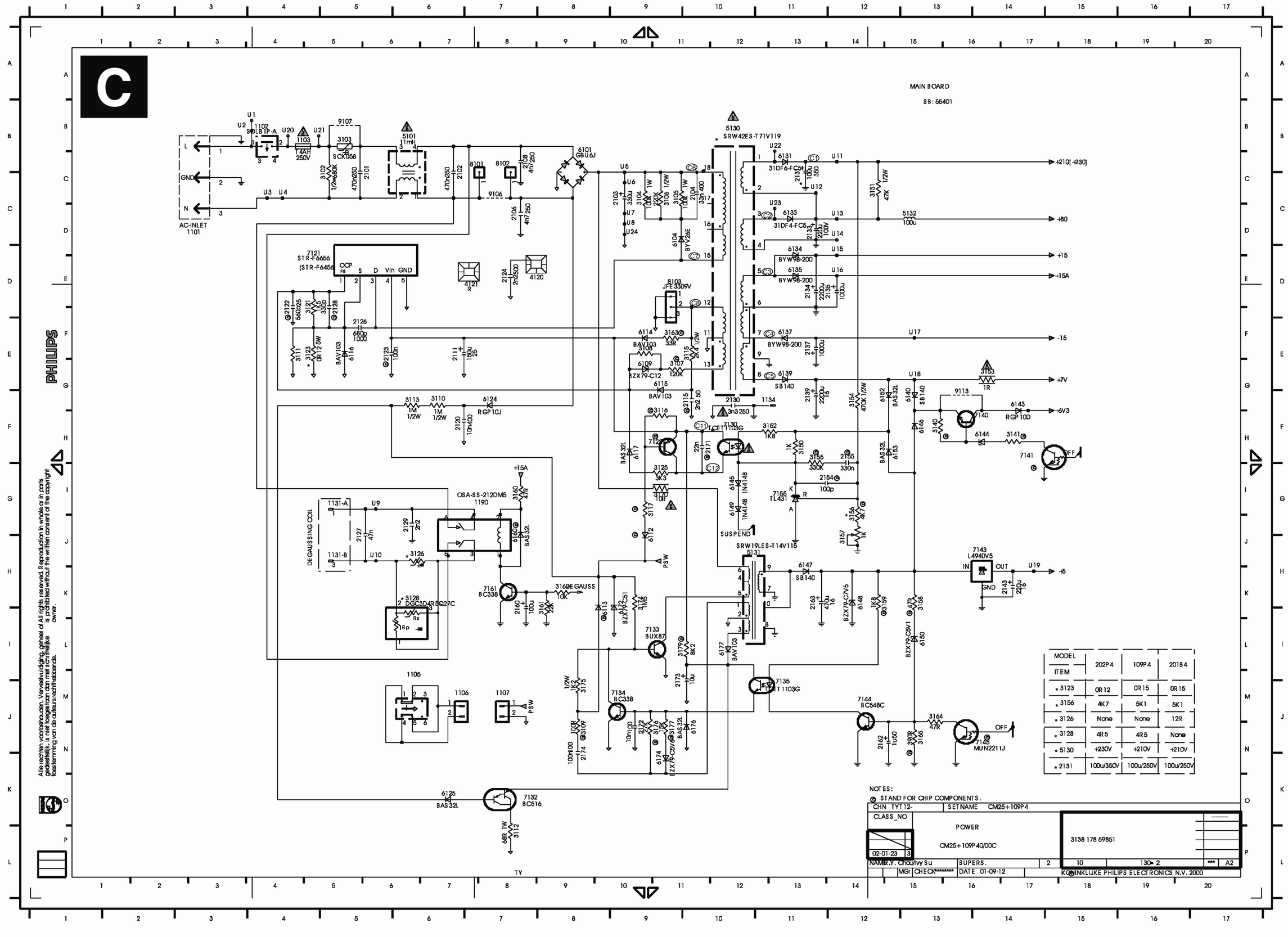
3451	D6	A
3457	D6	A
3464	C5	A
3467	C6	A
3491	B5	A
3492	B5	A
3494	B5	A
3527	A5	A
3530	A5	A
3555	A5	A
3556	A5	A
3584	E5	A
3618	B1	A
3620	B4	A
3622	B4	A
3624	C4	A
3626	C4	A
3628	C4	A
3630	C4	A
3632	C4	A
3655	B1	A
3656	B1	A
3660	B1	A
3661	B1	A
3662	B1	A
3663	B1	A
3664	C1	A
3665	C1	A
3666	C1	A
3667	C1	A
3668	C1	A
3673	A1	A
3686	A1	A
3687	A1	A
3688	A1	A
3699	B1	A
3919	B1	A
6112	E3	A
6113	E4	A
6114	E3	A
6115	E3	A
6116	E3	A
6117	E3	A
6125	E3	A
6152	D3	A
6153	D3	A
6160	D1	A
6176	E4	A
6177	E4	A
6301	B6	A
6302	A6	A
6303	A6	A
6304	A6	A
6391	B5	A
6392	B5	A
6423	D6	A
6463	C6	A
6653	B1	A
6654	C1	A
6656	B1	A
7122	E3	A
7141	D3	A
7145	D3	A
7302	C6	A
7303	C6	A
7304	B6	A
7391	C5	A
7392	C5	A
7424	E6	A
7427	D6	A
7466	C6	A
7501	A4	A
7544	A5	A
7566	E6	A
7627	B4	A
7628	B4	A
7629	C4	A
7630	C4	A
7631	C4	A
7632	C3	A
7633	C3	A
7653	C1	A
7654	C1	A

Power Schematic Diagram

Go to cover page



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U1 B4
U2 B3
U3 C4
U4 C4
U5 B9
U6 C9
U7 C9
U8 C9
U9 G5
U10 H5
U11 B12
U12 C11
U13 C12
U14 C12
U15 D12
U16 D12
U17 E13
U18 E13
U19 H14
U20 B4
U21 B4
U22 B11
U23 C11
U24 C9
1101 C3
1102 B4
1103 B4
1105 I6
1106 J6
1107 J7
1131-A G5
1131-B H5
1134 F11
1190 G7
2101 B5
2102 B6
2103 C9
2104 C10
2106 C7
2108 B7
2111 E6
2115 F10
2120 F6
2122 D4
2123 E5
2124 D7
2126 E5
2127 G5
2128 D5
2129 G6
2130 F10
2131 C11
2133 C11
2134 D11
2135 D12
2137 E11
2139 F11
2143 H14
2154 G11
2155 F12
2160 H7
2162 J12
2163 H11
2171 F10
2172 J9
2173 I9
2174 K8
3102 B5
3103 B5
3104 C9
3105 C9
3106 C9
3107 E9
3108 E9
3109 J8
3110 F6
3111 E4
3112 L7
3113 F6
3115 E10
3116 F9
3117 G9
3121 D4
3123 E4
3125 G9
3126 H6
3128 H6
3140 F13
3141 F14
3150 F11
3151 C12
3152 F11
3153 E14
3154 F12
3155 F11
3156 G12
3157 G12
3158 H13
3159 H12
3160 G7
3161 H8
3162 H8
3163 E9
3164 J13
3165 J13
3170 G9
3174 H9
3175 J8
3176 J9
3177 J9
3179 I9
4120 D8
4121 D6
5101 B6
5130 B10
5131 H10
5132 C13
6101 B8
6104 C9
6109 E9
6112 G9
6113 I8
6114 E9
6115 E9
6116 E5
6117 F9
6124 F7
6125 K6
6131 B11
6133 C11
6134 D11
6135 D11
6137 E11
6139 E11
6140 F13
6143 F14
6144 F14
6145 G10
6146 F13
6147 H11
6148 H12
6149 G10
6150 I13
6152 F12
6153 F12
6160 H7
6172 H9
6174 K9
6176 J10
6177 I10
7121 D4
7122 F9
7130 F10
7132 K7
7133 I9
7134 J9
7135 I11
7140 F13
7141 F14
7143 H14
7144 J12
7145 J13
7155 G11
7161 H7
8101 B7
8102 B7
8103 D9
9106 C7
9107 B5
9113 F13

MHR Schematic Diagram

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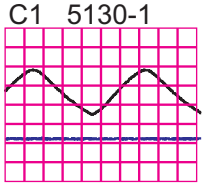
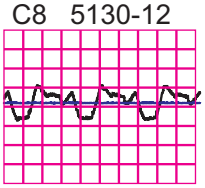
C1 5130-1



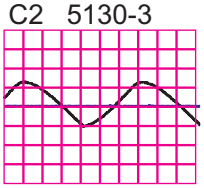
10 V/div AC
2 uS/div

C8 5130-12



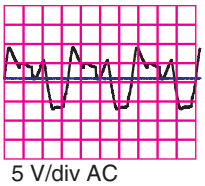
10 V/div AC
5 mS/div

C2 5130-3



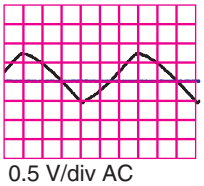
5 V/div AC
2 uS/div

C11 7130-4



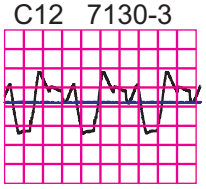
5 V/div AC
5 mS/div

C3 5130-5



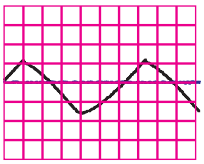
0.5 V/div AC
2 uS/div

C12 7130-3



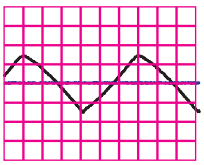
5 V/div AC
5 mS/div

C4 5130-7



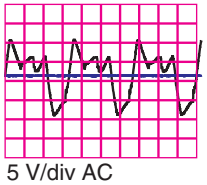
0.5 V/div AC
2 uS/div

C5 5130-9



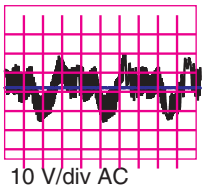
0.2 V/div AC
2 uS/div

C6 5130-18

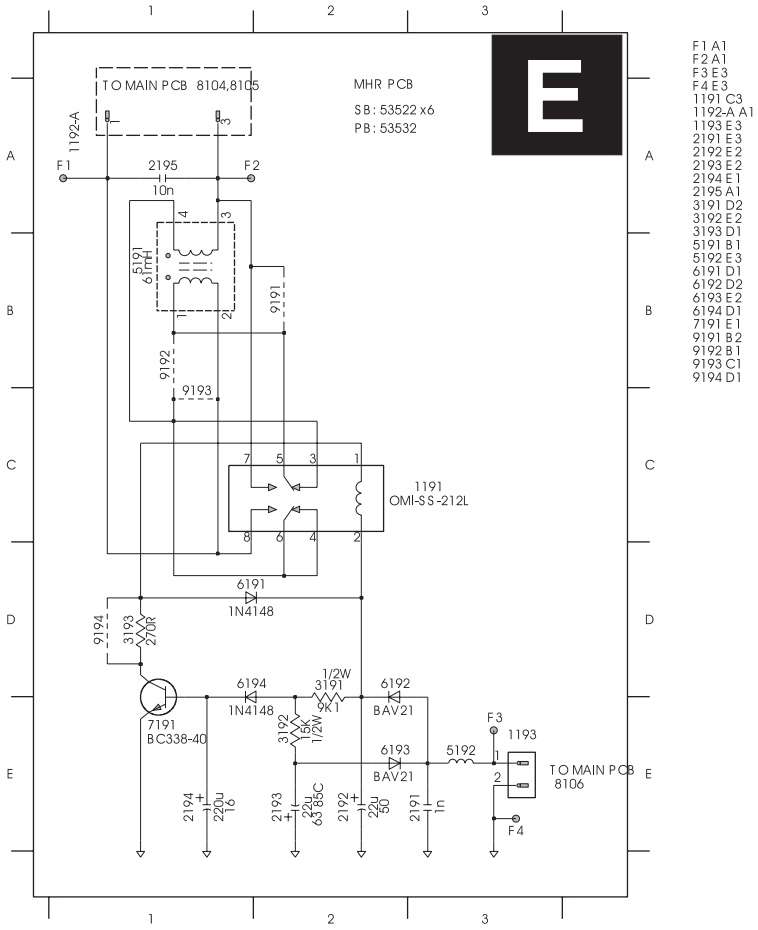


5 V/div AC
5 mS/div

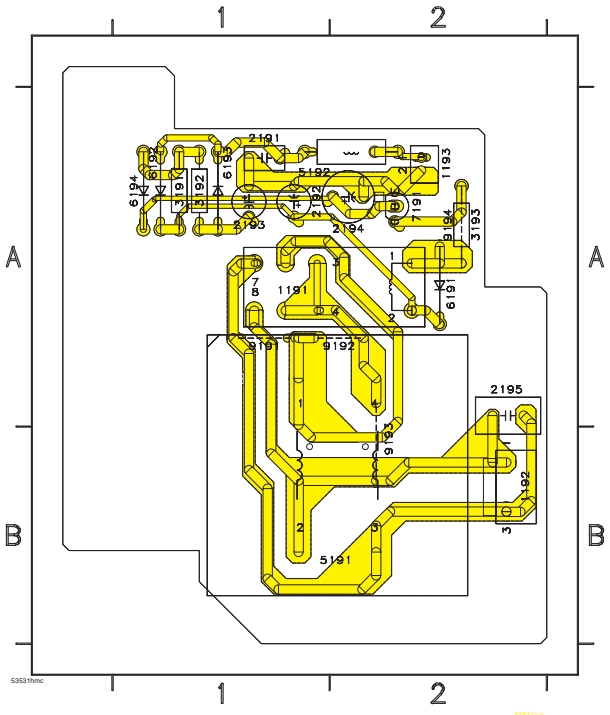
C7 5130-15



10 V/div AC
5 mS/div



MHR Panel PCB (F)



BOARD
REF
SIDE
____

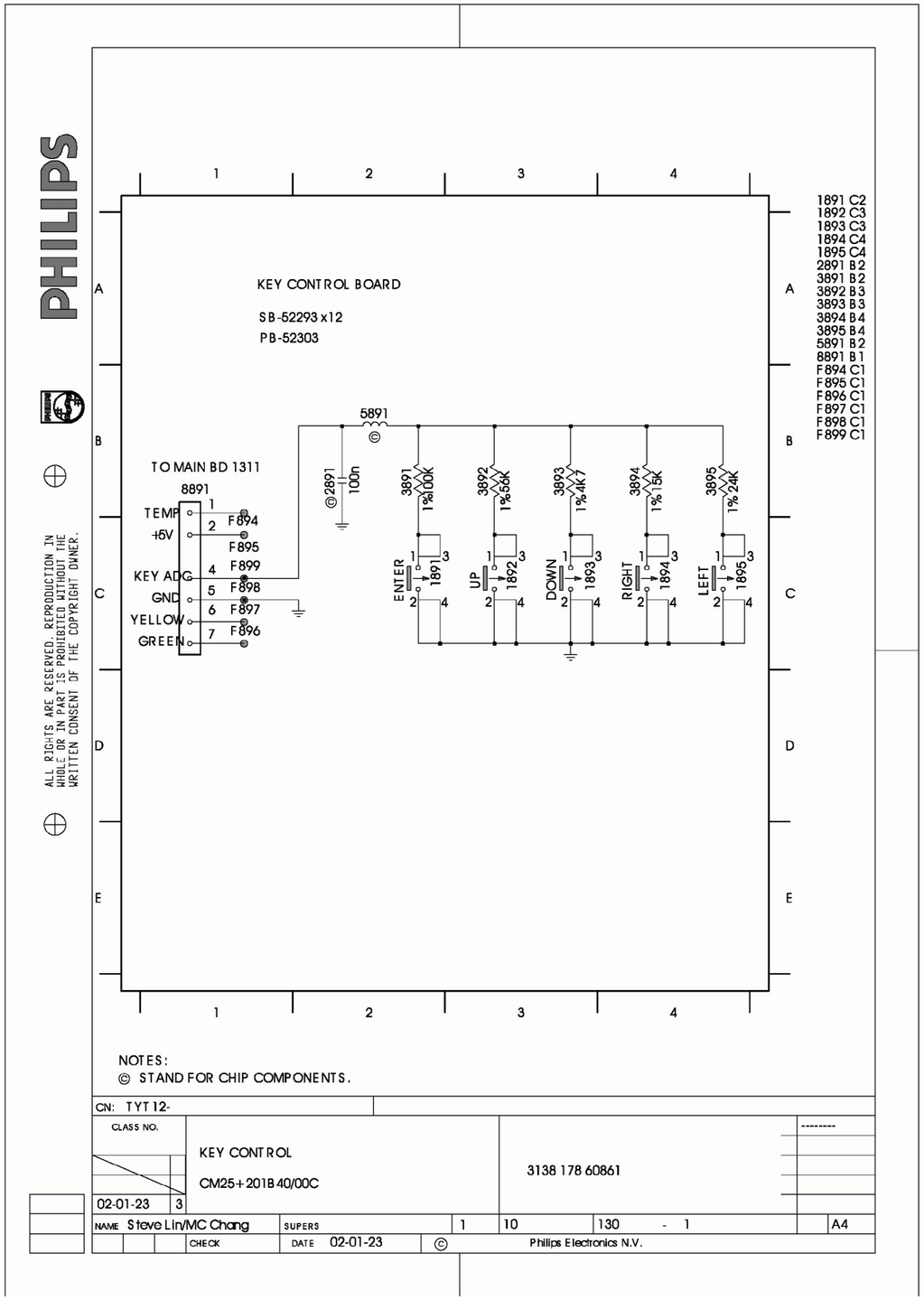
1191 A1
1192 B2
1193 A2
2191 A1
2192 A1
2193 A1
2194 A2
2195 A2

3191 A1
3192 A1
3193 A2
5191 B2
5192 A1
6191 A2
6192 A1
6193 A1

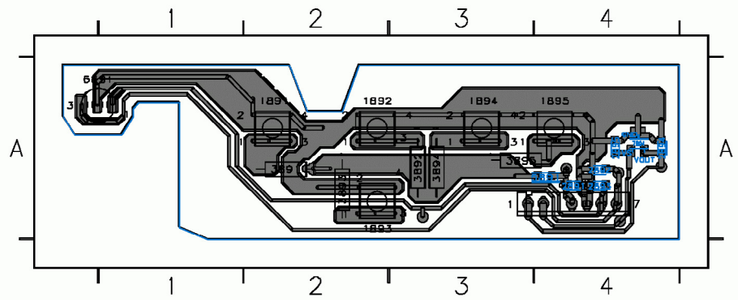
6194 A1
7191 A2
9191 A1
9192 A2
9193 B2
9194 A2

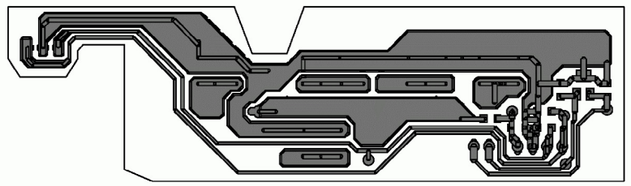
Key Control Schematic Digram

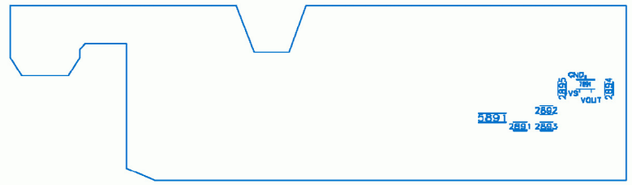
D

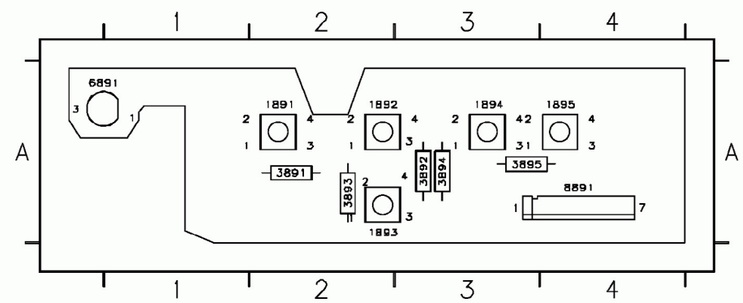


Control Panel PCB (D)









# REF	GRID LABEL	BOARD SIDE
1891	A2	B
1892	A2	B
1893	A2	B
1894	A3	B
1895	A4	B
3891	A2	B
3892	A3	B
3893	A2	B
3894	A3	B
3895	A3	B
6891	A1	B
8891	A4	B

# REF	GRID LABEL	BOARD SIDE
1891	A4	B
1892	A4	B
1893	A4	B
1894	A4	B
1895	A5	B
3891	A4	B
3892	A4	B
3893	A4	B
3894	A4	B
3895	A5	B
6891	A3	B
8891	A5	B

# REF	GRID LABEL	BOARD SIDE
2891	A4	A
2892	A4	A
2893	A4	A
2894	A4	A
2895	A4	A
5891	A4	A
7891	A4	A

0. Warning

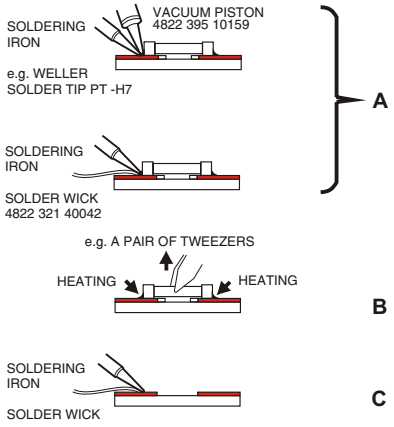
All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage
- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs
- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING

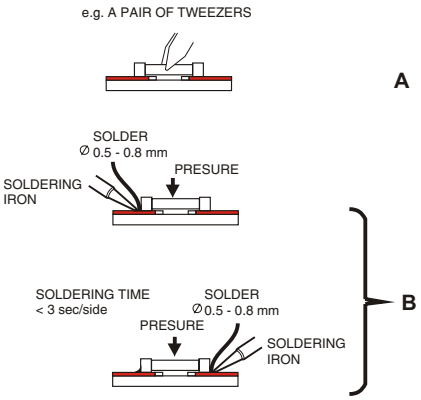


- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

1.3 Caution on removal
- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs
- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is Positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

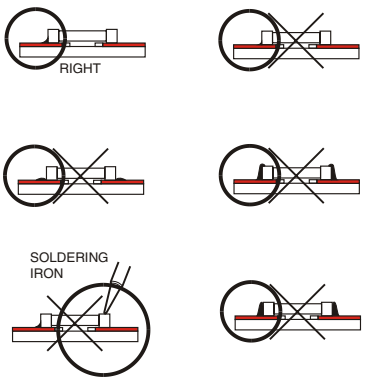
Fig. 2 MOUNTING



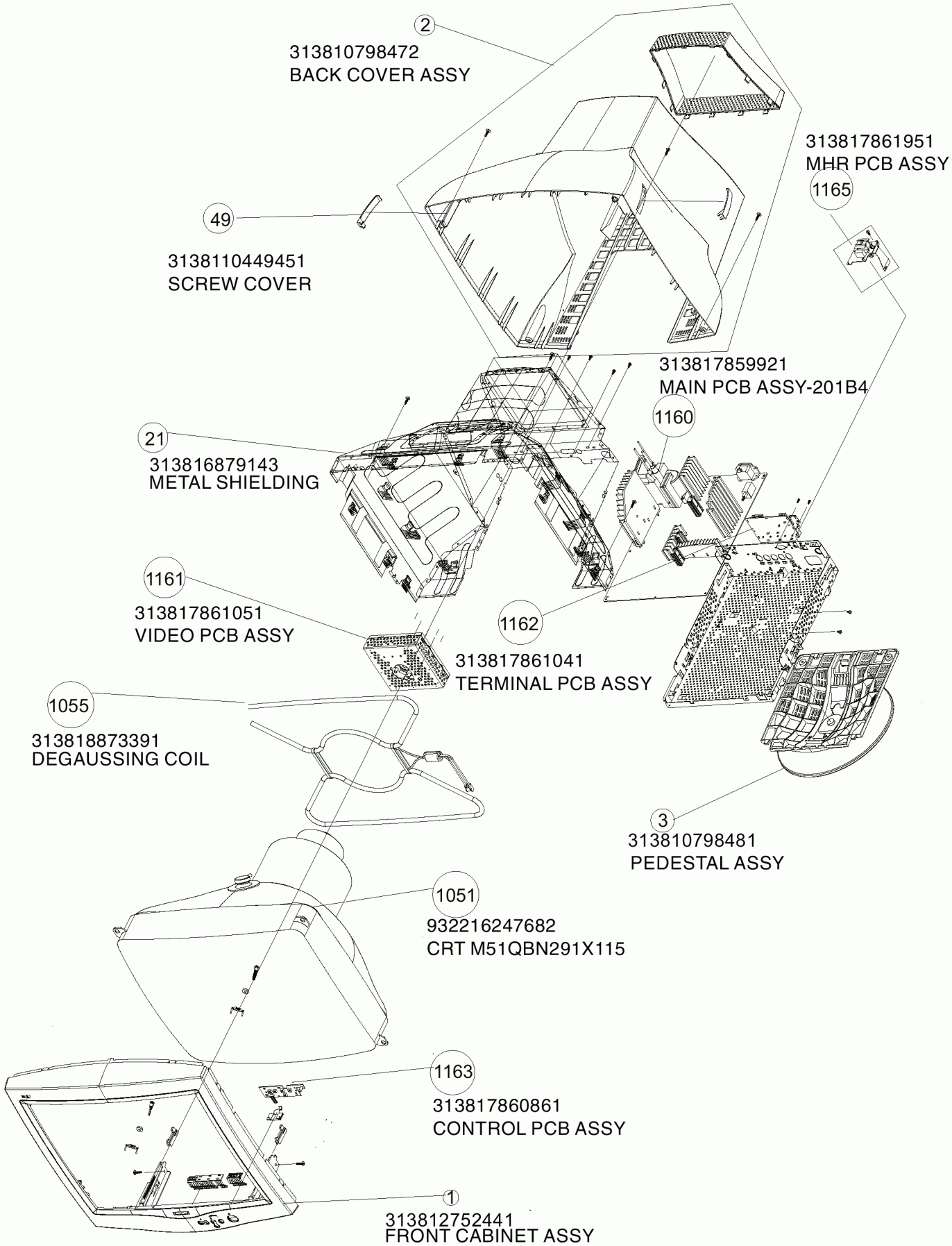
2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Exploded View



Recommanded Parts List

Model : 201B40/00C

ITEM	CODE NUMBER			DESCRIPTION
1	3138	127	52441	FRONT CABINET ASSY(201B4)
2	3138	107	98472	BACK COVER ASSY(201B4)
3	3138	107	98481	PEDESTAL ASSY
4	3138	107	98512	KNOB ASSY
44	3138	104	49471	BASE
46	3138	104	49651	KNOB-OSD
47	3138	104	55631	KNOB-POWER
48	3138	104	50672	LENS-POWER
49	3138	104	49451	SCREW COVER
53	3138	104	49462	SWIVEL
601	3138	117	03881	E-D.F.U. ASSY
450	3138	106	61151	CARTON
451	3138	106	56411	CUSHION - TOP FRONT
452	3138	106	56422	CUSHION - BOTTOM
454	3138	106	45301	P.E. BAG
1053⚠	2438	070	98118	MAINS CORD(220V)-1.5M
1054	3138	188	73461	I/F CABLE
1103⚠	2422	086	00208	FUSE T4AH 250V
1265	3138	178	59931	EEPROM IC ASSY(7336)
5671⚠	3138	188	73701	TFM L.O.T. LAYER 12MM WIRE
7001	9322	142	60682	IC AN5870K 30P
7121	9322	140	39680	IC STRF6456 (LF1352)
7130	9322	140	14667	PHOTOCOUPLER TCET1103G 4P
7143	9322	092	00687	IC L4940V5 3P
7155	9322	083	67676	IC TL431CZ
7301	8238	274	43451	CPU 96148-K420PH-50A)
7363	9334	006	10682	IC MC7812CT 3P
7364	9339	208	10682	IC L7808CV 3P
7404	9332	826	60652	IC HEF4053BP 16P
7421	9352	674	52112	IC TDA4856/V3
7541	9322	180	90687	TRANS IRF730B
7567	9319	002	34682	IC STV9379 7P
7651	9322	121	52682	IC L4990A 16P
7672	9322	146	46687	FET POW IRF740A
7673	9322	134	98687	FET POW FS7UM-16A
7701	9352	640	61112	IC TDA4887PS/V1
7781	9322	092	65685	IC WT6803-N160PH-06AB
7801	9322	163	09682	IC WT62P2
7806	9337	060	60112	IC PCF8574P

Model : 201B40/74

ITEM	CODE NUMBER			DESCRIPTION
450	3138	106	61361	CARTON
1053⚠	3138	118	76421	MAINS CORD(120V)

Remark: Item 450 and item 1053 are the differences between 201B40/00 and 201B40/74.

Spare Parts List

Parts List
CTV : 201B40/00C

0001	313812752441	FRONT CABINET ASSY-201B4
0002	313810798472	BACK COVER ASSY
0003	313810798481	PEDESTAL ASSY
0004	313810798512	KNOB ASSY
0041	313810449411	FRONT CABINET
0042	313810449422	BACK COVER
0043	313810449441	REAR-COVER
0044	313810449471	BASE
0046	313810449651	KNOB-OSD
0047	313810455631	KNOB-POWER
0048	313810450672	LENS-POWER
0049	313810449451	SCREW COVER
0053	313810449462	SWIVEL
1051⚠	332216247682	CRT M51QBN291X115(SMG)

Various

0450	313810661151	CARTON
0451	313810656411	CUSHION - TOP
0452	313810656422	CUSHION - BOTTOM
0454	313810645301	P.E.BAG

Accessories

0601	313811703881	E-D.F.U. ASSY
0602	313811703891	E-D.F.U.
0615	313811703791	HEX CODE OF F/W(NO MAT'L
0615	313811703791	HEX CODE OF F/W(NO MAT'L

1052	313818807721	201B4-ALL CHASSIS KITS
1053⚠	243807098118	MAINSCORD (220V)-1.5M -CM3
1054	313818873461	CORD SUB-D 15/1M5/15SUB-D
1055	313818873391	COIL DEGAUS TDC259
1059	332214489801	SPOILER
1101	313817876762	AC INLET ASSY
1102	243812800107	SWI POW 1P 5/80A PIN SFDL
1103⚠	242208600208	FUSE 5X20 HT4A 250V IEC
1131	243802500208	WAFER 2P
1160	313817859921	201B4-MAIN PCB ASSY
1161	313817861051	VIDEO PCB ASSY
1162	313817861041	TERMINAL PCB ASSY
1163	313817860861	CONTROL PCB ASSY
1165	313817861951	MHR PCB ASSY
1190	243813200141	RELAY 2P12V 5A 0SA-SSY
1191	241112102038	RELAY 2P12V 5A OMISS212L
1192	313816876341	CON BM V 2PM 7.92 M24183
1193	313816872031	2P WAFER M24262(VERT)
1250	313817861861	HOR TRANS ASSY
1251	313817854291	VERT IC ASSY(7567-STV9379)
1252	313817859861	BUCK CON ASSY(7541-IRF730)
1253	313817861911	EHT ASSY (7672/7673)
1254	313817807021	12V REG ASSY(7363-L7812)
1255	313817807031	S-CAP MOSFET ASSY(7622-SLA50
1256	313817861941	POW O/P ASSY(7121)
1257	313817807221	DIODE ASSY(6672-31DF6/8E)
1263	313817807081	8V REG ASSY(7364-L7808)
1265	313817859931	EEPROM ASSY-201B4
1271	313817806391	VIDEO IC ASSYLM2402(7705)
1273	313817853351	CERC CAP+CORE ASSY-2763
1274	313817853361	CERC CAP+CORE ASSY-2765
1275	313817861901	CERC CAP+CORE ASSY(2764)
1286	313818873311	CON BNC V 5PF 17.78
1293	243803100167	SOC IC V 42PF 1.77 DIL
1301	243854300064	OSC XTL 12MHZ 32P HC49/S
1311	243803100066	CON BM V 7PM 2.50 625/635
1501	313810020993	WAFER 4P 2.35DIA
1503	243803100116	CON BM V 3PM 2.50 63172

1160 201B4-MAIN PCB

2101	202030790005	CAP MPOL UV250V S 470N
2102	202030790005	CAP MPOL UV250V S 470N
2103	203803524005	ELCAP LP 4VS 330U PM20
2104	222236856333	CAP MPOL 4VS 33N PM5
2106	202055490139	CERSAF NSB 250V S 4N7
2108	202055490139	CERSAF NSB 250V S 4N7
2111	202203100083	ELCAP KM 25VS 150U PM20
2115	223858016618	CER2 0805 X7R 50V 2N2 PM10
2120	203830200167	CAP MPOL 4VS 10N PM10 B
2122	223886115561	CER1 0805 NP0 50V 560P PM5R
2123	223891015649	CER2 0805 X7R 25V 1N PM10
2124	225261808221	CER2 DC Y5P5V S 2N2 PM10
2126	225271108616	CERC 1KV 680P Y5R PM10A
2127	222234741473	CAP POL 347250V S 47N PM10
2128	223886115331	CER1 0805 NP0 50V 330P PM5
2129	202055490127	CERSAF NSA 250VS 2N2 PM20
2130	202055490149	CERSAF NSA 250VS 3N3 PM20
2131	202203100082	ELCAP KM 250VS 1U PM20
2133	202203100067	ELCAP GL 1VS 220U PM20
2134	202203100065	ELCAP RXJ 25VS 22U PM20
2135	202203100064	ELCAP RXJ 25VS 10U PM20
2137	202203100064	ELCAP RXJ 25VS 10U PM20
2139	203803500056	ELCAP SX 16VS 22U PM20
2143	203803135221	ELCAP VT 16VS 220U PM20
2154	223886115101	CER1 0805 NP0 50V 1P PM5
2155	222291019856	CER2 0805 Y5V 25V 330N P8020
2160	203803452101	ELCAP VX 10VS 1U PM20
2162	203801750221	ELCAP RE 50VS 1U PM20
2163	203803511222	ELCAP REA 16V S 470U PM20
2171	223858015641	CER2 0805 X7R 50V 22N PM10
2172	222236585103	CAP MPOL 1VS 10N PM10
2173	203803513501	ELCAP RGA 50V S 10U PM20
2174	222236525104	CAP MPOL 1VS 1N PM10
2301	203801750222	ELCAP RE 50VS 2U2 PM20
2302	203801750222	ELCAP RE 50VS 2U2 PM20
2303	222236526104	CAP MPOL 1VS 1N PM5
2304	203801750218	ELCAP RE 16VS 47U PM20
2305	203803511222	ELCAP REA 16V S 470U PM20
2306	203801750224	ELCAP MM 50VS 10U PM20
2307	223886115229	CER1 0805 NP0 50V 22P PM5
2308	203801750222	ELCAP RE 50VS 2U2 PM20
2309	203801750222	ELCAP RE 50VS 2U2 PM20
2310	222236525473	CAP MPOL 1VS 47N PM10
2311	222236525473	CAP MPOL 1VS 47N PM10
2312	225250508205	CER1 DC NP0 50V S 22P PM5
2313	225250508205	CER1 DC NP0 50V S 22P PM5
2314	223886115229	CER1 0805 NP0 50V 22P PM5
2315	223858015636	CER2 0805 X7R 50V 10N PM10
2316	222236525473	CAP MPOL 1VS 47N PM10
2336	222236525104	CAP MPOL 1VS 1N PM10
2337	223886115229	CER1 0805 NP0 50V 22P PM5
2338	223886115229	CER1 0805 NP0 50V 22P PM5
2361	203803513204	ELCAP RGA 16V S 330U PM20
2362	203803513201	ELCAP RGA 16V S 1U PM20
2391	223891015649	CER2 0805 X7R 25V 1N PM10
2392	223886115101	CER1 0805 NP0 50V 1P PM5
2401	222236525104	CAP MPOL 1VS 1N PM10
2421	222236525104	CAP MPOL 1VS 1N PM10
2422	222236525154	CAP MPOL 1VS 150N PM10
2423	225250508215	CER1 DC NP0 50V S 220P PM5
2424	223891015649	CER2 0805 X7R 25V 1N PM10
2425	202203100097	ELCAP KM 16VS 15U PM20
2426	225250508205	CER1 DC NP0 50V S 22P PM5
2431	222236526104	CAP MPOL 1VS 1N PM5
2432	203830150186	CAP PP PPN1V S 8N2 PM5
2433	203830250218	CAP MPOL 1VS 10N PM2
2434	203830150157	CAP PP PPN1V S 5N6 PM2
2435	203830150186	CAP PP PPN1V S 8N2 PM5
2441	203830150191	CAP PP PPN1V S 3N3 PM2
2442	223858016621	CER2 0805 X7R 50V 3N3 PM10
2443	223891015645	CER2 0805 X7R 25V 47N PM10
2445	203801750218	ELCAP RE 16VS 47U PM20
2446	222236525474	CAP MPOL 1VS 470N PM10
2456	203801750218	ELCAP RE 16VS 47U PM20
2461	203830100104	CAP PP PPN250V S 220N PM5
2462	223886115221	CER1 0805 NP0 50V 220P PM5
2463	203801750218	ELCAP RE 16VS 47U PM20
2464	223858016624	CER2 0805 X7R 50V 5N6 PM10
2491	222236525104	CAP MPOL 1VS 1N PM10
2501	203803522802	ELCAP BP NK160V S 0U47 PM20
2502	203803522801	ELCAP BP NK160V S 1U PM20
2503	222236525104	CAP MPOL 1VS 1N PM10
2504	222237590559	CAP PP-MPOL 2K5VS 4N3 PM5
2506	202055890561	CERHDT RR 2KVS 220P PM10
2507	202055890561	CERHDT RR 2KVS 220P PM10
2515	202055890557	CERHDT RR 1KVS 1N PM10
2516	222236525474	CAP MPOL 1VS 470N PM10
2518	222236525104	CAP MPOL 1VS 1N PM10
2519	222236525104	CAP MPOL 1VS 1N PM10
2520	222236525104	CAP MPOL 1VS 1N PM10
2541	202203600002	ELCAP BP NK 50V S 1U PM20
2542	203830100117	CAP MPP 1VS 1U PM5
2543	202203100082	ELCAP KM 250VS 1U PM20
2544	202055890562	CERHDT RR 2KVS 330P PM10
2545	223891015649	CER2 0805 X7R 25V 1N PM10
2546	223891015649	CER2 0805 X7R 25V 1N PM10
2551	203803513301	ELCAP RGA 25V S 47U PM20
2552	203803513301	ELCAP RGA 25V S 47U PM20
2553	203830100194	CAP PP PPN250V S 1N PM5
2554	203830100411	CAP PP PPN250V S 120N PM5
2555	222236525104	CAP MPOL 1VS 1N PM10
2556	223891015649	CER2 0805 X7R 25V 1N PM10
2566	203803513501	ELCAP RGA 50V S 10U PM20
2567	203803513305	ELCAP RGA 25V S 470U PM20
2568	203803511402	ELCAP REA 35V S 1U PM20
2569	225250508215	CER1 DC NP0 50V S 220P PM5
2576	222236585223	CAP MPOL 1VS 22N PM10
2577	203803513305	ELCAP RGA 25V S 470U PM20
2578	222236525104	CAP MPOL 1VS 1N PM10
2579	222236525474	CAP MPOL 1VS 470N PM10
2586	222236526104	CAP MPOL 1VS 1N PM5
2588	222236525104	CAP MPOL 1VS 1N PM10
2589	222236525104	CAP MPOL 1VS 1N PM10
2602	225271214166	CERHDT F-Y5R 2KVS 180P
2603	202055890557	CERHDT RR 1KVS 1N PM10
2608	223555900099	CER2 DC 2KVS 10N PM20
2613	203803513504	ELCAP RGA 50V S 4U7 PM20
2621	222234741473	CAP POL 347250V S 47N PM10
2622	203830100195	CAP PP PPN250V S 120N PM5
2623	203830100165	CAP PP PPN250V S 180N PM5
2624	203830100303	CAP MPP MPS250V S 470N PM5
2625	203830100222	CAP MPP MPS250V S 820N PM5
2628	223891015649	CER2 0805 X7R 25V 1N PM10
2636	203830100402	CAP MPP MPS250V S 1U8 PM5
2651	203801750221	ELCAP RE 50VS 1U PM20
2652	223858016616	CER2 0805 X7R 50V 1N5 PM10
2653	223858016621	CER2 0805 X7R 50V 3N3 PM10
2655	203830150151	CAP PP PPN1V S 10N PM2
2656	203803513309	ELCAP RGA 25V S 220U PM20
2657	223858016615	CER2 0805 X7R 50V 1N2 PM10
2658	222278019867	CER2 0805 Y5V 16V 2U2 P8020
2659	203801750285	ELCAP REA 25V S 47U PM20
2660	223878019858	CER2 0805 Y5V 16V 470N P8020
2661	223878019858	CER2 0805 Y5V 16V 470N P8020
2662	223886115101	CER1 0805 NP0 50V 1P PM5
2663	222278019867	CER2 0805 Y5V 16V 2U2 P8020
2671	203803513901	ELCAP RGA 250V S 33U PM20
2672	223891015649	CER2 0805 X7R 25V 1N PM10
2673	202055890562	CERHDT RR 2KVS 330P PM10
2681	223858016618	CER2 0805 X7R 50V 2N2 PM10
2682	202203100086	ELCAP KL 250VS 1U PM20
2683	203830100174	CAP PP PPN630V S 4N7 PM5
2684	222234741473	CAP POL 347250V S 47N PM10
2685	203801750218	ELCAP RE 16VS 47U PM20
2686	202055890557	CERHDT RR 1KVS 1N PM10
2691	222234741473	CAP POL 347250V S 47N PM10
2693	203830200226	CAP MPOL 1VS 1U8 PM5
2694	222236526104	CAP MPOL 1VS 1N PM5

3102	232224213684	RST MGL VR37 A 680K PM5
3103	213866000024	NTC DC SCK-058 S 5R PM15
3104	213810500337	RST MOX 1W RSS A 1KPM5
3105	213810500337	RST MOX 1W RSS A 1KPM5
3106	232224213224	RST MGL VR37 A 220K PM5
3107	232273061124	RST SM 0805RC11 120KPM5
3109	319802151010	RST SM 0805 1R PM5 COL
3110	232224181005	RST MGL VR25 A 1M PM1
3112	212010590767	RST MOX 1W RSS A 68RPM5
3113	232224181005	RST MGL VR25 A 1M PM1
3115	231291512402	RST MFLM MBB0207A 2K4 PM1
3121	213810113152	RST CRB CFR-12 A 1K5 PM5
3122	319802190020	RST SM 0805JUMP. 0R05 COL
3123	213810500444	RST MPLT5W MPR S 0R15PM10
3124	319802190020	RST SM 0805JUMP. 0R05 COL
3125	213810113332	RST CRB CFR-12 A 3K3 PM5
3126	232266296684	PTC 276V S 12R PM25
3150	213810113102	RST CRB CFR-12 A 1K PM5
3151	231291514703	RST MFLM MBB0207A 47K PM1
3152	213810113182	RST CRB CFR-12 A 1K8 PM5
3153	232220533108	RST FUSE NFR25 A 1R PM5
3154	213810500433	RST MGL RMU A 470K PM1
3155	319802153340	RST SM 0805 330K PM5 COL
3156	232273465102	RST SM 0805RC12H 5K1 PM1
3157	213836500081	RTRM CER LIN 1K H VG067TL1
3158	319802154790	RST SM 0805 47R PM5 COL
3159	319802151820	RST SM 0805 1K8 PM5 COL
3160	231291514709	RST MFLM MBB0207A 47R PM1
3161	213810113223	RST CRB CFR-12 A 22K PM5
3162	213810113103	RST CRB CFR-12 A 10K PM5
3163	319802153390	RST SM 0805 33R PM5 COL
3164	213810113479	RST CRB CFR-12 A 47R PM5
3165	319802153910	RST SM 0805 390R PM5 COL
3170	232220733109	RST FUSE NFR25H A 10R PM5
3174	213810113155	RST CRB CFR-12 A 1M5 PM5
3175	231291511202	RST MFLM MBB0207A 1K2 PM1
3176	319802152730	RST SM 0805 27K PM5 COL
3177	319802151530	RST SM 0805 15K PM5 COL
3179	319802158220	RST SM 0805 8K2 PM5 COL
3301	213810113223	RST CRB CFR-12 A 22K PM5
3302	319802154720	RST SM 0805 4K7 PM5 COL
3303	319802154720	RST SM 0805 4K7 PM5 COL
3304	319802154720	RST SM 0805 4K7 PM5 COL
3305	213810113223	RST CRB CFR-12 A 22K PM5
3306	213810113104	RST CRB CFR-12 A 1K PM5
3307	213810113102	RST CRB CFR-12 A 1K PM5
3310	319802151030	RST SM 0805 10K PM5 COL
3311	319802151030	RST SM 0805 10K PM5 COL
3312	319802151030	RST SM 0805 10K PM5 COL
3313	319802151030	RST SM 0805 10K PM5 COL
3314	319802151030	RST SM 0805 10K PM5 COL
3315	319802151030	RST SM 0805 10K PM5 COL
3316	213810113472	RST CRB CFR-12 A 4K7 PM5
3317	213810113101	RST CRB CFR-12 A 1R PM5
3319	213811203006	RST NETW RNL 5X 4K7 PM5
3326	213810113472	RST CRB CFR-12 A 4K7 PM5
3327	319802151530	RST SM 0805 15K PM5 COL
3328	231291512701	RST MFLM MBB0207A 270R PM1
3329	231291511509	RST MFLM MBB0207A 15R PM1
3330	213810113153	RST CRB CFR-12 A 15K PM5
3331	213810113472	RST CRB CFR-12 A 4K7 PM5
3332	213810113101	RST CRB CFR-12 A 1R PM5

3337 213810113222 RST CRB CFR-12 A 2K2 PM5
3338 213810113222 RST CRB CFR-12 A 2K2 PM5
3340 213810113101 RST CRB CFR-12 A 1R PM5
3341 213810113103 RST CRB CFR-12 A 10K PM5
3342 231291513303 RST MFLM MBB0207A 33K PM1
3343 213810113101 RST CRB CFR-12 A 1R PM5
3344 213810113101 RST CRB CFR-12 A 1R PM5
3345 213810113101 RST CRB CFR-12 A 1R PM5
3347 319802154720 RST SM 0805 4K7 PM5 COL
3348 213810113223 RST CRB CFR-12 A 22K PM5
3349 213810113223 RST CRB CFR-12 A 22K PM5
3350 213810113223 RST CRB CFR-12 A 22K PM5
3361 319802190020 RST SM 0805JUMP. 0R05 COL
3362 319802190020 RST SM 0805JUMP. 0R05 COL
3363 319802190020 RST SM 0805JUMP. 0R05 COL
3365 319802190020 RST SM 0805JUMP. 0R05 COL
3366 319802190020 RST SM 0805JUMP. 0R05 COL
3367 319802190020 RST SM 0805JUMP. 0R05 COL
3393 319802154720 RST SM 0805 4K7 PM5 COL
3394 319802151030 RST SM 0805 10K PM5 COL
3395 319802154720 RST SM 0805 4K7 PM5 COL
3396 319802151030 RST SM 0805 10K PM5 COL
3397 213810113472 RST CRB CFR-12 A 4K7 PM5
3398 213810113101 RST CRB CFR-12 A 1R PM5
3403 319802190020 RST SM 0805JUMP. 0R05 COL
3404 213810113471 RST CRB CFR-12 A 470R PM5
3421 231291512203 RST MFLM MBB0207A 22K PM1
3422 213810113471 RST CRB CFR-12 A 470R PM5
3423 319802154720 RST SM 0805 4K7 PM5 COL
3424 213810113101 RST CRB CFR-12 A 1R PM5
3425 319802151030 RST SM 0805 10K PM5 COL
3426 213810113101 RST CRB CFR-12 A 1R PM5
3427 213810113101 RST CRB CFR-12 A 1R PM5
3428 213810113225 RST CRB CFR-12 A 2M2 PM5
3429 232273061155 RST SM 0805RC11 1M5PM5
3430 319802151010 RST SM 0805 1R PM5 COL
3431 319802151820 RST SM 0805 1K8 PM5 COL
3432 231291515491 RST MFLM MBB0207A 549R PM1
3433 231291512672 RST MFLM MBB0207A 2K67 PM1
3434 319802154720 RST SM 0805 4K7 PM5 COL
3441 231291513903 RST MFLM MBB0207A 39K PM1
3442 232224182204 RST MGL VR25 A 220K PM1
3443 213810113683 RST CRB CFR-12 A 68K PM5
3444 319802190020 RST SM 0805JUMP. 0R05 COL
3446 319802151230 RST SM 0805 12K PM5 COL
3450 230620403828 RST FUSE NFR25 S 8R2 PM5
3451 319802151220 RST SM 0805 1K2 PM5 COL
3456 230620403828 RST FUSE NFR25 S 8R2 PM5
3457 319802151220 RST SM 0805 1K2 PM5 COL
3458 213810113103 RST CRB CFR-12 A 10K PM5
3462 213810113103 RST CRB CFR-12 A 10K PM5
3464 319802151530 RST SM 0805 15K PM5 COL
3465 213810113103 RST CRB CFR-12 A 10K PM5
3466 213810113103 RST CRB CFR-12 A 10K PM5
3467 319802154720 RST SM 0805 4K7 PM5 COL
3468 213810113472 RST CRB CFR-12 A 4K7 PM5
3469 213811273473 RST CRB CFR-25 A 47K PM5
3470 213810113221 RST CRB CFR-12 A 220R PM5
3471 213810113473 RST CRB CFR-12 A 47K PM5
3472 231291511503 RST MFLM MBB0207A 15K PM1
3473 231291511003 RST MFLM MBB0207A 10K PM1
3474 231291511504 RST MFLM MBB0207A 150K PM1
3475 213811273103 RST CRB CFR-25 A 10K PM5
3476 232224181005 RST MGL VR25 A 1M PM1
3491 319802154730 RST SM 0805 47K PM5 COL
3492 319802154730 RST SM 0805 47K PM5 COL
3494 319802151010 RST SM 0805 1R PM5 COL
3495 213810113101 RST CRB CFR-12 A 1R PM5
3501 213810500335 RST MOX5W RSM5WLS 680R PM5
3502 213810500442 RST MOX5W RSM5WLS 5K6 PM5
3503 213810113479 RST CRB CFR-12 A 47R PM5
3504 213810113103 RST CRB CFR-12 A 10K PM5
3505 213810500335 RST MOX5W RSM5WLS 680R PM5
3506 213810500404 RST MOX 7W RSH S 1R5 PM5
3507 231291516809 RST MFLM MBB0207A 68R PM1
3508 213811273221 RST CRB CFR-25 A 220R PM5
3515 213810500074 RST MOX5W RSM5WLS 150R PM5
3516 213810500076 RST MOX5W RSM5WLS 330R PM5
3517 213810113471 RST CRB CFR-12 A 470R PM5
3518 213810113471 RST CRB CFR-12 A 470R PM5
3519 231291516809 RST MFLM MBB0207A 68R PM1
3521 231291516809 RST MFLM MBB0207A 68R PM1
3522 231291514708 RST MFLM MBB0207A 4R7 PM1
3523 230620403159 RST FUSE NFR25 S 15R PM5
3524 230620403159 RST FUSE NFR25 S 15R PM5
3525 213811273471 RST CRB CFR-25 A 470R PM5
3527 319802151030 RST SM 0805 10K PM5 COL
3528 213810113101 RST CRB CFR-12 A 1R PM5
3529 213810113103 RST CRB CFR-12 A 10K PM5
3530 319802151820 RST SM 0805 1K8 PM5 COL
3531 213811273122 RST CRB CFR-25 A 1K2 PM5
3541 213810113109 RST CRB CFR-12 A 10R PM5
3542 231291512001 RST MFLM MBB0207A 2R PM1
3544 231291511009 RST MFLM MBB0207A 10R PM1
3545 213810500095 RST MOX 7W RSH S 33R PM5
3546⚠ 213810113479 RST CRB CFR-12 A 47R PM5
3551 230620403108 RST FUSE NFR25 S 1R PM5
3552 230620403108 RST FUSE NFR25 S 1R PM5
3553 231291513302 RST MFLM MBB0207A 3K3 PM1
3554 231291511203 RST MFLM MBB0207A 12K PM1
3555 319802151030 RST SM 0805 10K PM5 COL
3556 232273061202 RST SM 0805RC11 2KPM5
3566 213810113472 RST CRB CFR-12 A 4K7 PM5
3569 232220733108 RST FUSE NFR25H A 1R PM5
3570 231291512202 RST MFLM MBB0207A 2K2 PM1
3571 213811273471 RST CRB CFR-25 A 470R PM5
3572 213811273471 RST CRB CFR-25 A 470R PM5
3576 231291512202 RST MFLM MBB0207A 2K2 PM1
3577⚠ 232220733108 RST FUSE NFR25H A 1R PM5
3578 231291514709 RST MFLM MBB0207A 47R PM1
3579 231291511808 RST MFLM MBB0207A 1R8 PM1
3580 231291512208 RST MFLM MBB0207A 2R2 PM1
3581 231291511801 RST MFLM MBB0207A 180R PM1
3582 231291511808 RST MFLM MBB0207A 1R8 PM1
3585 213810113333 RST CRB CFR-12 A 33K PM5
3586 213810113433 RST CRB CFR-12 A 43K PM5
3587 213810113823 RST CRB CFR-12 A 82K PM5
3589 213810113333 RST CRB CFR-12 A 33K PM5
3590⚠ 232220533479 RST FUSE NFR25 A 47R PM5
3591 232220533479 RST FUSE NFR25 A 47R PM5
3592 231291514701 RST MFLM MBB0207A 470R PM1
3593 231291514709 RST MFLM MBB0207A 47R PM1
3594 213866000029 NTC DC TTC-301 S 3R PM5
3601 232224213224 RST MGL VR37 A 220K PM5
3605 232224213104 RST MGL VR37 A 1K PM5
3606 232224213105 RST MGL VR37 A 1M PM5
3607 232224213105 RST MGL VR37 A 1M PM5
3608 231291511202 RST MFLM MBB0207A 1K2 PM1
3609 212010128152 RST CMP ERC12 A 1K5 PM10
3612 213810113823 RST CRB CFR-12 A 82K PM5
3615 231291511802 RST MFLM MBB0207A 1K8 PM1
3616 232224213475 RST MGL VR37 A 4M7 PM5
3617 212010128222 RST CMP ERC12 A 2K2 PM10
3618 319802151540 RST SM 0805 150K PM5 COL
3622 319802151040 RST SM 0805 1K PM5 COL
3623 213810113103 RST CRB CFR-12 A 10K PM5
3624 319802151040 RST SM 0805 1K PM5 COL
3625 213810113103 RST CRB CFR-12 A 10K PM5
3626 319802151040 RST SM 0805 1K PM5 COL
3627 213810113103 RST CRB CFR-12 A 10K PM5
3628 319802151040 RST SM 0805 1K PM5 COL
3629 213810113103 RST CRB CFR-12 A 10K PM5
3630 319802151040 RST SM 0805 1K PM5 COL
3631 213810113333 RST CRB CFR-12 A 33K PM5
3632 319802151040 RST SM 0805 1K PM5 COL
3633 213810113333 RST CRB CFR-12 A 33K PM5
3634 213811273222 RST CRB CFR-25 A 2K2 PM5
3653 213811273129 RST CRB CFR-25 A 12R PM5
3656 319802154720 RST SM 0805 4K7 PM5 COL
3658 213810113332 RST CRB CFR-12 A 3K3 PM5
3659 231291515602 RST MFLM MBB0207A 5K6 PM1
3660 319802155620 RST SM 0805 5K6 PM5 COL
3661 319802154790 RST SM 0805 47R PM5 COL
3662 319802154720 RST SM 0805 4K7 PM5 COL
3663 232273464702 RST SM 0805RC12H 4K7 PM1
3664 319802153320 RST SM 0805 3K3 PM5 COL
3665 319802151030 RST SM 0805 10K PM5 COL
3666 319802151050 RST SM 0805 1M PM5 COL
3667 319802154720 RST SM 0805 4K7 PM5 COL
3668 319802152230 RST SM 0805 22K PM5 COL
3671 232224181005 RST MGL VR25 A 1M PM1
3672 232220533478 RST FUSE NFR25 A 4R7 PM5
3673 319802151050 RST SM 0805 1M PM5 COL
3674 231291511002 RST MFLM MBB0207A 1K PM1
3675 231291511009 RST MFLM MBB0207A 10R PM1
3676 231291511003 RST MFLM MBB0207A 10K PM1
3677 212010592444 RST MOX 2W RSS S 68R PM5
3678 213811273101 RST CRB CFR-25 A 1R PM5
3679 213811273471 RST CRB CFR-25 A 470R PM5
3680 213811273103 RST CRB CFR-25 A 10K PM5
3681 231291511009 RST MFLM MBB0207A 10R PM1
3682 232224213104 RST MGL VR37 A 1K PM5
3683 212010128102 RST CMP ERC12 A 1K PM10
3684 231291514702 RST MFLM MBB0207A 4K7 PM1
3685 213811273103 RST CRB CFR-25 A 10K PM5
3686 319802152720 RST SM 0805 2K7 PM5 COL
3687 319802151030 RST SM 0805 10K PM5 COL
3688 319802153930 RST SM 0805 39K PM5 COL
3689 213810113153 RST CRB CFR-12 A 15K PM5
3690 213810113102 RST CRB CFR-12 A 1K PM5
3691 212010128152 RST CMP ERC12 A 1K5 PM10
3692 232224213684 RST MGL VR37 A 680K PM5
3693 231291511004 RST MFLM MBB0207A 1K PM1
3694 231291518203 RST MFLM MBB0207A 82K PM1
3695 213836500102 RTRM CER LIN 20K H VG067TL1
3696 231291511005 RST MFLM MBB0207A 1M PM1
3697 231291517503 RST MFLM MBB0207A 75K PM1
3698 213836500102 RTRM CER LIN 20K H VG067TL1
3699 319802151020 RST SM 0805 1K PM5 COL

5101 313816873611 LINE FILTER(HJC-K8259)
5130⚠ 313818873541 TFM SMT LAYER SRW42ES-T70V11
5131 313818873551 TFM SMT LAYER SRW19LES-T14V1
5132 242253600036 IND FXD TSL0808S 1U PM10
5301 242253597416 IND FXD SP0406A 33U PM10
5501⚠ 313817871331 DRIVER TRANSF.
5502 313816874061 BEAD BF30UTA-3.5X5X1B
5503 313816873551 LINEARITY COIL(54A-9050H)
5504 313816873541 LINEARITY COIL(54A-9049H)
5505 313816874061 BEAD BF30UTA-3.5X5X1B
5540 313816874061 BEAD BF30UTA-3.5X5X1B
5541 313811878961 G DRIVER TRANSFORMER
5542 242253600036 IND FXD TSL0808S 1U PM10
5543 313812874431 HOR.CENTERING TRAN.
5544 313811878951 H SHIFT CHOKECOIL
5545 313812874421 PUNK HEAD CHOKE
5601 313812874411 DAF TRANSFORMER
5670 242253597069 IND FXD SP0305A 4U7 PM10
5671⚠ 313818873701 TFM LOT LAYER 12MM WIRE
5672 242253600036 IND FXD TSL0808S 1U PM10

6101⚠ 932218229682 BRIDGE GBU6J-B5 (PAJI) B
6104⚠ 933703700133 DIO REC BYV26E A (PHSE)
6109 319801021290 DIO REG BZX79-C12 A COL
6114 933952580685 DIO SIG SM BAV103 (TEG0)
6115 933952580685 DIO SIG SM BAV103 (TEG0)
6116 933952580685 DIO SIG SM BAV103 (TEG0)
6117 933913910115 DIO SIG SM BAS32L (PHSE)
6124 933497950683 DIO REC RGP10J A (GI)
6125 933913910115 DIO SIG SM BAS32L (PHSE)
6131 932212636682 DIO REC 31DF6-FC5 (NIEC)
6133 932212636682 DIO REC 31DF6-FC5 (NIEC)
6134 932208187683 DIO REC BYW98-2 (ST)
6135 932208187683 DIO REC BYW98-2 (ST)
6137⚠ 932208187683 DIO REC BYW98-2 (ST)
6139 933957760683 DIO REC SB140 A (GI)
6140 933957760683 DIO REC SB140 A (GI)
6143 933751660683 DIO REC RGP10D A (GI)
6145 319801010010 DIO SIG 1N4148 (COL)
6147 933957760683 DIO REC SB140 A (GI)
6148 933117760133 DIO REG BZX79-C7V5 A (PHSE)
6149 319801010010 DIO SIG 1N4148 (COL)
6150 319801025180 DIO REG BZX79-C5V1 A COL
6152 933913910115 DIO SIG SM BAS32L (PHSE)
6153 933913910115 DIO SIG SM BAS32L (PHSE)
6160 933913910115 DIO SIG SM BAS32L (PHSE)
6172 933117960133 DIODE BZX79-C51
6174 319801025680 DIO REG BZX79-C5V6 A COL
6176 933913910115 DIO SIG SM BAS32L (PHSE)
6177 933952580685 DIO SIG SM BAV103 (TEG0)
6303 319801010620 DIO SIG SM BAV99 (COL)
6304 319801010620 DIO SIG SM BAV99 (COL)
6391 319801010620 DIO SIG SM BAV99 (COL)
6392 319801010620 DIO SIG SM BAV99 (COL)
6422 933957760683 DIO REC SB140 A (GI)
6423 933913910115 DIO SIG SM BAS32L (PHSE)
6424 319801010010 DIO SIG 1N4148 (COL)
6426 319801010010 DIO SIG 1N4148 (COL)
6462 933117900133 DIO REG BZX79-C30 A (PHSE)
6463 933913910115 DIO SIG SM BAS32L (PHSE)
6464 319801026880 DIO REG BZX79-C6V8 A COL
6501 933493960683 DIO REC RGP10G A (GI)
6502 933751660683 DIO REC RGP10D A (GI)
6503 319801010010 DIO SIG 1N4148 (COL)
6506 933543490133 DIO REC BYV27-50 A (PHSE)
6507 319801021890 DIO REG BZX79-C18 A COL
6515 933703700133 DIO REC BYV26E A (PHSE)
6518 932213602687 DIO REC 5TUZ52C (TSOJ)
6540 933497950683 DIO REC RGP10J A (GI)
6542 319801010010 DIO SIG 1N4148 (COL)
6543 932211574682 DIO REC 31DF4-FC5 (NIEC0
6544 933751660683 DIO REC RGP10D A (GI)
6545 933751660683 DIO REC RGP10D A (GI)
6566 319801010010 DIO SIG 1N4148 (COL)
6567 933504400683 DIO REC RGP15G A (GI)
6621 319801010010 DIO SIG 1N4148 (COL)
6622 319801025180 DIO REG BZX79-C5V1 A COL
6651 933751660683 DIO REC RGP10D A (GI)
6652 319801025180 DIO REG BZX79-C5V1 A COL
6653 933913910115 DIO SIG SM BAS32L (PHSE)
6654 933913910115 DIO SIG SM BAS32L (PHSE)
6655 319801025180 DIO REG BZX79-C5V1 A COL
6656 933913910115 DIO SIG SM BAS32L (PHSE)
6671 933497950683 DIO REC RGP10J A (GI)
6672 932210388682 DIO REC 31DF6 A (INR0)
6673 933751660683 DIO REC RGP10D A (GI)
6674 933612320113 DIO REC BY584 A (PHSE)

Spare Parts List

7121 932214039682 IC STR-F6456(LF1352) (SAKJ)
7122 933967380685 TRA SIG SMBC858C (ONSE)
7130 932214014667 OPT CP TCET1103(G) (VISH)
7132 933567120126 TRA SIG BC516 (PHSE)
7133 932206519687 TRA POW BUX87 (ST)
7134 933953420676 TRA SIG TBC338-40 (TOSJ)
7135 932214014667 OPT CP TCET1103(G) (VISH)
7143 932209200687 IC L4940V5 (ST)
7144 933553530676 TRA SIG TBC548C (TOSJ)
7145 932209265685 TRA SIG SMMUN2211J (ONSE)
7155 932208367676 IC TL431CZ S(ST)
7161 933953420676 TRA SIG TBC338-40 (TOSJ)
7301 823827443451 CPU IC (6148-K420PH-50A)
7301 823827443451 CPU IC (6148-K420PH-50A)
7302 933967380685 TRA SIG SMBC858C (ONSE)
7303 933967310685 TRA SIG SMBC848C (ONSE)
7304 932209265685 TRA SIG SMMUN2211J (ONSE)
7336 932212662682 IC M24C16-BN6 (ST)
7363 933400610682 IC MC7812CT (MOTA)
7364 933920810682 IC L7808CV (ST)
7391 932209265685 TRA SIG SMMUN2211J (ONSE)
7392 933967380685 TRA SIG SMBC858C (ONSE)
7404 933282660652 IC HEF4053BP (PHSE)
7421 935267452112 IC TDA4856/V3 (PHSE)
7422 933953420676 TRA SIG TBC338-40 (TOSJ)
7423 933953410676 TRA SIG TBC328-40 (TOSJ)
7424 932209265685 TRA SIG SMMUN2211J (ONSE)
7425 933553530676 TRA SIG TBC548C (TOSJ)
7426 933773860676 TRA SIG TBC558C (TOSJ)
7427 933967380685 TRA SIG SMBC858C (ONSE)
7461 933237780126 TRA SIG BC546B (PHSE)
7462 933553530676 TRA SIG TBC548C (TOSJ)
7463 933773860676 TRA SIG TBC558C (TOSJ)
7464 319802043020 TRA SIG BF423 (COL)
7465 319802043010 TRA SIG BF422 (COL)
7466 932209265685 TRA SIG SMMUN2211J (ONSE)
7501 934000540115 FET SIG SMBSP126 (PHSE)
7502 932214442671 TRA POW 2SC5445(AS) (TOSJ)
7503 932205702687 TRA POW BD533 (ST)
7504 932205703687 TRA POW BD534 (ST)
7505 933984890682 IC LM358N (ST)
7541 932218090687 TRANS IRF730B
7542 932204822682 TRA POW 2SC2344E (TSAJ)
7543 932204823682 TRA POW 2SA1011E (TSAJ)
7544 933967380685 TRA SIG SMBC858C (ONSE)
7545 319802043010 TRA SIG BF422 (COL)
7566 932209265685 TRA SIG SMMUN2211J (ONSE)
7567 931900234682 IC STV9379 (ST)
7586 933984890682 IC LM358N (ST)
7587 933221930126 TRA SIG BC637 (PHSE)
7588 933221960126 TRA SIG BC638 (PHSE)
7601 932206519687 TRA POW BUX87 (ST)
7621 932214232687 FET POW IRF640A (FSC0)
7622 932214562667 FET POW SLA5058 (SAKJ)
7628 932209265685 TRA SIG SMMUN2211J (ONSE)
7629 932209265685 TRA SIG SMMUN2211J (ONSE)
7630 932209265685 TRA SIG SMMUN2211J (ONSE)
7631 932209265685 TRA SIG SMMUN2211J (ONSE)
7632 932209265685 TRA SIG SMMUN2211J (ONSE)
7633 932209265685 TRA SIG SMMUN2211J (ONSE)
7651 932212152682 IC L4990A (ST)
7652 933553530676 TRA SIG TBC548C (TOSJ)
7653 933967380685 TRA SIG SMBC858C (ONSE)
7654 933967310685 TRA SIG SMBC848C (ONSE)
7671 934003960126 FET SIG BSN254A (PHSE)
7672 932214646687 FET POW IRF740A (FSC0)
7673 932213498687 FET POW FS7UM-16A (MITJ)
7674 933553530676 TRA SIG TBC548C (TOSJ)

1161 Video PCB

2702 223858015636 CER2 0805 X7R 50V 10N PM10
2704 203803522801 ELCAP BP NK 160V S 1U PM20
2705 203803513907 ELCAP RGA 250V S 1U PM20
2706 242254944346 SURGE PROT.DSP-201M-D04F
2707 223891015649 CER2 0805 X7R 25V 1N PM10
2708 223891015649 CER2 0805 X7R 25V 1N PM10
2709 223891015649 CER2 0805 X7R 25V 1N PM10
2710 223886115479 CER1 0805 NP0 50V 47P PM5
2720 223886115479 CER1 0805 NP0 50V 47P PM5
2722 223858015636 CER2 0805 X7R 50V 10N PM10
2724 203803522801 ELCAP BP NK 160V S 1U PM20
2725 203803513907 ELCAP RGA 250V S 1U PM20
2726 242254944346 SURGE PROT.DSP-201M-D04F
2727 223891015649 CER2 0805 X7R 25V 1N PM10
2736 223858019814 CER2 0805 Y5V 50V 220N P8020
2740 223886115479 CER1 0805 NP0 50V 47P PM5
2742 223858015636 CER2 0805 X7R 50V 10N PM10
2744 203803522801 ELCAP BP NK 160V S 1U PM20
2745 203803513907 ELCAP RGA 250V S 1U PM20
2746 242254944346 SURGE PROT.DSP-201M-D04F
2748 203803513301 ELCAP RGA 25V S 47U PM20
2749 223891015649 CER2 0805 X7R 25V 1N PM10
2750 223891015649 CER2 0805 X7R 25V 1N PM10
2751 223891015649 CER2 0805 X7R 25V 1N PM10
2752 203803513707 ELCAP RGA 1V S 47U PM20
2753 203803513907 ELCAP RGA 250V S 1U PM20
2756 223886115101 CER1 0805 NP0 50V 1P PM5
2757 223886115101 CER1 0805 NP0 50V 1P PM5
2760 223891015649 CER2 0805 X7R 25V 1N PM10
2761 223555900099 CER2 DC 2KV S 10N PM20
2762 225260214416 CER2 DC X7R 2KVS 470P PM10
2763 225261818021 CER2 DC Y5P 5V S 1N PM10
2764 202055890557 CERHDT RR 1KV S 1N PM10
2765 225260215216 CER2 DC X7R 2KVS 220P PM10
2766 223858016623 CER2 0805 X7R 50V 4N7 PM10
2767 223891015649 CER2 0805 X7R 25V 1N PM10
2768 223891015649 CER2 0805 X7R 25V 1N PM10
2770 203803513501 ELCAP RGA 50V S 10U PM20
2771 223891015649 CER2 0805 X7R 25V 1N PM10
2772 203803513301 ELCAP RGA 25V S 47U PM20
2773 223891015649 CER2 0805 X7R 25V 1N PM10
2774 223891015649 CER2 0805 X7R 25V 1N PM10
2775 203803513204 ELCAP RGA 16V S 330U PM20
2776 223891015649 CER2 0805 X7R 25V 1N PM10
2777 203803513301 ELCAP RGA 25V S 47U PM20
2778 223891015649 CER2 0805 X7R 25V 1N PM10
2779 203803513707 ELCAP RGA 1V S 47U PM20
2780 222236525104 CAP MPOL 1VS 1N PM10
2781 203803513907 ELCAP RGA 250V S 1U PM20
2782 222236555103 CAP MPOL 4VS 10N PM10
2783 223886115229 CER1 0805 NP0 50V 22P PM5
2784 223886115229 CER1 0805 NP0 50V 22P PM5
2785 223886115229 CER1 0805 NP0 50V 22P PM5
2786 223886115229 CER1 0805 NP0 50V 22P PM5
2787 223891015649 CER2 0805 X7R 25V 1N PM10
2788 223891015649 CER2 0805 X7R 25V 1N PM10
2789 223886115101 CER1 0805 NP0 50V 1P PM5
2790 223886115101 CER1 0805 NP0 50V 1P PM5
2791 203803513201 ELCAP RGA 16V S 1U PM20
2792 223858016623 CER2 0805 X7R 50V 4N7 PM10
2793 223886115101 CER1 0805 NP0 50V 1P PM5
2797 222236555103 CAP MPOL 4VS 10N PM10
2798 203803513201 ELCAP RGA 16V S 1U PM20
2799 223891015649 CER2 0805 X7R 25V 1N PM10
2801 223858015636 CER2 0805 X7R 50V 10N PM10
2802 223886115101 CER1 0805 NP0 50V 1P PM5
2803 223891015649 CER2 0805 X7R 25V 1N PM10
2804 223886115181 CER1 0805 NP0 50V 180P PM5
2805 223891015649 CER2 0805 X7R 25V 1N PM10
2806 223891015649 CER2 0805 X7R 25V 1N PM10
2807 223891015649 CER2 0805 X7R 25V 1N PM10
2811 203803513907 ELCAP RGA 250V S 1U PM20
2812 223858016614 CER2 0805 X7R 50V 1N PM10
2813 223858016621 CER2 0805 X7R 50V 3N3 PM10
2814 223891015649 CER2 0805 X7R 25V 1N PM10
2815 223891015649 CER2 0805 X7R 25V 1N PM10
2821 223858016614 CER2 0805 X7R 50V 1N PM10
2822 223858016621 CER2 0805 X7R 50V 3N3 PM10
2831 223858016614 CER2 0805 X7R 50V 1N PM10
2832 223858016621 CER2 0805 X7R 50V 3N3 PM10

3701 232273467509 RST SM 0805 RC12H 75R PM1
3702 319802154790 RST SM 0805 47R PM5 COL
3703 319802152290 RST SM 0805 22R PM5 COL
3704 232273061569 RST SM 0805 RC11 56R PM5
3705 319802151050 RST SM 0805 1M PM5 COL
3706 231291515603 RST MFLM MBB0207A 56K PM1
3707 213810113224 RST CRB CFR-12 A 220K PM5
3708 319802158230 RST SM 0805 82K PM5 COL
3709 212010128479 RST CMP ERC12 A 47R PM10
3710 319802151020 RST SM 0805 1K PM5 COL
3711 319802151230 RST SM 0805 12K PM5 COL
3712 319802151020 RST SM 0805 1K PM5 COL
3713 319802151010 RST SM 0805 1R PM5 COL
3714 319802151010 RST SM 0805 1R PM5 COL
3715 319802151010 RST SM 0805 1R PM5 COL
3717 319802154710 RST SM 0805 470R PM5 COL
3718 319802154710 RST SM 0805 470R PM5 COL
3721 232273467509 RST SM 0805 RC12H 75R PM1
3722 319802154790 RST SM 0805 47R PM5 COL
3723 319802152290 RST SM 0805 22R PM5 COL
3724 232273061569 RST SM 0805 RC11 56R PM5
3725 319802151050 RST SM 0805 1M PM5 COL
3726 231291515603 RST MFLM MBB0207A 56K PM1
3727 213810113224 RST CRB CFR-12 A 220K PM5
3728 319802158230 RST SM 0805 82K PM5 COL
3729 212010128479 RST CMP ERC12 A 47R PM10
3730 319802151020 RST SM 0805 1K PM5 COL
3731 319802151230 RST SM 0805 12K PM5 COL
3732 319802152220 RST SM 0805 2K2 PM5 COL
3733 319802151810 RST SM 0805 180R PM5 COL
3734 319802151010 RST SM 0805 1R PM5 COL
3735 319802154710 RST SM 0805 470R PM5 COL
3736 319802151010 RST SM 0805 1R PM5 COL
3737 319802151050 RST SM 0805 1M PM5 COL
3738 319802151050 RST SM 0805 1M PM5 COL
3741 232273467509 RST SM 0805 RC12H 75R PM1
3742 319802154790 RST SM 0805 47R PM5 COL
3743 319802152290 RST SM 0805 22R PM5 COL
3744 232273061569 RST SM 0805 RC11 56R PM5
3745 319802151050 RST SM 0805 1M PM5 COL
3746 231291515603 RST MFLM MBB0207A 56K PM1
3747 213810113224 RST CRB CFR-12 A 220K PM5
3748 319802158230 RST SM 0805 82K PM5 COL
3749 212010128479 RST CMP ERC12 A 47R PM10
3750 319802151020 RST SM 0805 1K PM5 COL
3751 319802151230 RST SM 0805 12K PM5 COL
3755 319802190020 RST SM 0805 JUMP. 0R05 COL
3760 212010128153 RST CMP ERC12 A 15K PM10
3761 231291511503 RST MFLM MBB0207A 15K PM1
3763 212010128152 RST CMP ERC12 A 1K5 PM10
3765 231291511804 RST MFLM MBB0207A 180K PM1
3766 319802151010 RST SM 0805 1R PM5 COL
3767 319802151010 RST SM 0805 1R PM5 COL
3768 319802151020 RST SM 0805 1K PM5 COL
3769 319802151520 RST SM 0805 1K5 PM5 COL
3783 319802151020 RST SM 0805 1K PM5 COL
3785 319802151020 RST SM 0805 1K PM5 COL
3786 319802151030 RST SM 0805 10K PM5 COL
3787 319802153320 RST SM 0805 3K3 PM5 COL
3788 319802151010 RST SM 0805 1R PM5 COL
3789 319802151010 RST SM 0805 1R PM5 COL
3790 319802151030 RST SM 0805 10K PM5 COL
3791 319802153320 RST SM 0805 3K3 PM5 COL
3792 232273464702 RST SM 0805 RC12H 4K7 PM1
3801 319802154720 RST SM 0805 4K7 PM5 COL
3802 319802155620 RST SM 0805 5K6 PM5 COL
3803 319802154720 RST SM 0805 4K7 PM5 COL
3804 319802151050 RST SM 0805 1M PM5 COL
3805 319802151030 RST SM 0805 10K PM5 COL
3806 319802153310 RST SM 0805 330R PM5 COL
3807 319802151530 RST SM 0805 15K PM5 COL
3808 319802151230 RST SM 0805 12K PM5 COL
3809 319802152240 RST SM 0805 220K PM5 COL
3811 232273061184 RST SM 0805 RC11 180K PM5
3812 319802156840 RST SM 0805 680K PM5 COL
3813 319802154730 RST SM 0805 47K PM5 COL
3815 319802151030 RST SM 0805 10K PM5 COL
3816 319802151020 RST SM 0805 1K PM5 COL
3821 232273061184 RST SM 0805 RC11 180K PM5
3822 319802156840 RST SM 0805 680K PM5 COL
3823 319802154730 RST SM 0805 47K PM5 COL
3825 319802151030 RST SM 0805 10K PM5 COL
3831 232273061184 RST SM 0805 RC11 180K PM5
3832 319802156840 RST SM 0805 680K PM5 COL
3833 319802154730 RST SM 0805 47K PM5 COL
3835 319802151030 RST SM 0805 10K PM5 COL
3836 319802151030 RST SM 0805 10K PM5 COL
3841 319802151030 RST SM 0805 10K PM5 COL
3842 319802151030 RST SM 0805 10K PM5 COL
3843 319802151030 RST SM 0805 10K PM5 COL
3844 319802151030 RST SM 0805 10K PM5 COL
3845 319802151010 RST SM 0805 1R PM5 COL
3846 319802151010 RST SM 0805 1R PM5 COL

5701 242253597069 IND FXD SP0305A 4U7 PM10
5702 313817876911 COIL 0.12UH PM10
5703 242254944197 IND FXD 0805 EMI 1MHZ 220R
5704 313816879121 FERRITE BEAD SMD (FB423226T-
5721 313817876911 COIL 0.12UH PM10
5722 242254944197 IND FXD 0805 EMI 1MHZ 220R
5731 313817876911 COIL 0.12UH PM10
5732 242254944197 IND FXD 0805 EMI 1MHZ 220R
5733 242254944197 IND FXD 0805 EMI 1MHZ 220R
5734 242253597069 IND FXD SP0305A 4U7 PM10
5735 242254944197 IND FXD 0805 EMI 1MHZ 220R

5701 242253597069 IND FXD SP0305A 4U7 PM10
5702 313817876911 COIL 0.12UH PM10
5703 242254944197 IND FXD 0805 EMI1MHZ 220R
5704 313816879121 FERRITE BEAD SMD (FB423226T-
5721 313817876911 COIL 0.12UH PM10
5722 242254944197 IND FXD 0805 EMI1MHZ 220R
5731 313817876911 COIL 0.12UH PM10
5732 242254944197 IND FXD 0805 EMI1MHZ 220R
5733 242254944197 IND FXD 0805 EMI1MHZ 220R
5734 242253597069 IND FXD SP0305A 4U7 PM10
5735 242254944197 IND FXD 0805 EMI1MHZ 220R
5736 242254944197 IND FXD 0805 EMI1MHZ 220R
5737 242254944197 IND FXD 0805 EMI1MHZ 220R
5760 313816874511 FERRITE BEAD
5761 242254944197 IND FXD 0805 EMI1MHZ 220R
5762 242254944197 IND FXD 0805 EMI1MHZ 220R
5763 242254944197 IND FXD 0805 EMI1MHZ 220R
5764 242254944197 IND FXD 0805 EMI1MHZ 220R
5765 242254944197 IND FXD 0805 EMI1MHZ 220R
5766 242253597069 IND FXD SP0305A 4U7 PM10
5767 313816874511 FERRITE BEAD
5768 242254942026 IND FXD BEAD EMI1MHZ 50R
5781 242253597069 IND FXD SP0305A 4U7 PM10
5782 242253597069 IND FXD SP0305A 4U7 PM10
5783 313817878601 BEAD 07UH VERT.
5791 242253597069 IND FXD SP0305A 4U7 PM10
5801 242254944197 IND FXD 0805 EMI1MHZ 220R

6701 933952580685 DIO SIG SM BAV103 (TEG0)
6702 933952580685 DIO SIG SM BAV103 (TEG0)
6703 933952580685 DIO SIG SM BAV103 (TEG0)
6704 933952580685 DIO SIG SM BAV103 (TEG0)
6705 933913910115 DIO SIG SM BAS32L (PHSE)
6721 933952580685 DIO SIG SM BAV103 (TEG0)
6722 933952580685 DIO SIG SM BAV103 (TEG0)
6723 933952580685 DIO SIG SM BAV103 (TEG0)
6724 933952580685 DIO SIG SM BAV103 (TEG0)
6725 933913910115 DIO SIG SM BAS32L (PHSE)
6731 933913910115 DIO SIG SM BAS32L (PHSE)
6732 319801010620 DIO SIG SM BAV99 (COL)
6741 933952580685 DIO SIG SM BAV103 (TEG0)
6742 933952580685 DIO SIG SM BAV103 (TEG0)
6743 933952580685 DIO SIG SM BAV103 (TEG0)
6744 933952580685 DIO SIG SM BAV103 (TEG0)
6745 933913910115 DIO SIG SM BAS32L (PHSE)
6761 933493960683 DIO REC RGP10G A (GI)
6762 933117900133 DIO REG BZX79-C30 A (PHSE)
6801 933913910115 DIO SIG SM BAS32L (PHSE)
6802 933913910115 DIO SIG SM BAS32L (PHSE)
6803 933913910115 DIO SIG SM BAS32L (PHSE)
6811 933137380215 DIO REG SM BZX84-C4V7 (PHSE)
6812 933913910115 DIO SIG SM BAS32L (PHSE)
6813 319801010620 DIO SIG SM BAV99 (COL)
6821 933137380215 DIO REG SM BZX84-C4V7 (PHSE)
6822 933913910115 DIO SIG SM BAS32L (PHSE)
6823 319801010620 DIO SIG SM BAV99 (COL)
6831 933137380215 DIO REG SM BZX84-C4V7 (PHSE)
6832 933913910115 DIO SIG SM BAS32L (PHSE)
6833 319801010620 DIO SIG SM BAV99 (COL)

7701 935264061112 IC TDA4887PS/V1 (PHSE)
7705 932213801667 IC LM2402T (NSC0)
7706 319802043010 TRA SIG BF422 (COL)
7707 319802043010 TRA SIG BF422 (COL)
7726 319802043010 TRA SIG BF422 (COL)
7727 319802043010 TRA SIG BF422 (COL)
7746 319802043010 TRA SIG BF422 (COL)
7747 319802043010 TRA SIG BF422 (COL)
7781 932218254682 IC WT6803-N160PH-06AB(WESE)
7782 932209265685 TRA SIG SMMUN2211J (ONSE)
7783 932209265685 TRA SIG SMMUN2211J (ONSE)
7801 932216309682 IC WT62P2 (WESE)
7801 932216309682 IC WT62P2 (WESE)
7801 932206163682 IC TL072CN (ST)
7802 933669110652 IC 74HC4066N (PHSE)
7803 319802043020 TRA SIG BF423 (COL)
7804 319802043020 TRA SIG BF423 (COL)
7805 319802043020 TRA SIG BF423 (COL)
7806 933706060112 IC PCF8574P (PHSE)
7807 933967310685 TRA SIG SMBC848C (ONSE)
7808 319802043020 TRA SIG BF423 (COL)
7809 319802043020 TRA SIG BF423 (COL)
7810 319802043020 TRA SIG BF423 (COL)

1162 Terminal PCB

2001 202202000697 ELCAP SEA 10V S 220U PM20
2002 202202000699 ELCAP SEA 16V S 220U PM20
2003 203803500037 ELCAP SM 16VS 47U PM20
2004 203803500037 ELCAP SM 16VS 47U PM20
2005 203803500037 ELCAP SM 16VS 47U PM20
2007 203803500037 ELCAP SM 16VS 47U PM20
2008 223891015649 CER2 0805 X7R 25V 1N PM10
2010 223891015649 CER2 0805 X7R 25V 1N PM10
2011 203803500037 ELCAP SM 16VS 47U PM20
2013 203803500037 ELCAP SM 16VS 47U PM20
2017 223891015649 CER2 0805 X7R 25V 1N PM10
2018 223886115109 CER1 0805 NP0 50V 10P PM5
2019 223886115109 CER1 0805 NP0 50V 10P PM5
2020 223886115109 CER1 0805 NP0 50V 10P PM5
2021 223886115109 CER1 0805 NP0 50V 10P PM5
2023 202202000697 ELCAP SEA 10V S 220U PM20
2025 202202000697 ELCAP SEA 10V S 220U PM20
2027 202202000697 ELCAP SEA 10V S 220U PM20
2031 223886115229 CER1 0805 NP0 50V 22P PM5
2032 223886115229 CER1 0805 NP0 50V 22P PM5
2033 223886115229 CER1 0805 NP0 50V 22P PM5
2034 223886115229 CER1 0805 NP0 50V 22P PM5
2035 223891015649 CER2 0805 X7R 25V 1N PM10
2036 223891015649 CER2 0805 X7R 25V 1N PM10

3001 319802152220 RST SM 0805 2K2 PM5 COL
3004 319802152220 RST SM 0805 2K2 PM5 COL
3006 319802154790 RST SM 0805 47R PM5 COL
3007 232273467509 RST SM 0805 RC12H 75R PM1
3008 319802154790 RST SM 0805 47R PM5 COL
3009 232273467509 RST SM 0805 RC12H 75R PM1
3010 319802154790 RST SM 0805 47R PM5 COL
3011 232273467509 RST SM 0805 RC12H 75R PM1
3012 319802154710 RST SM 0805 470R PM5 COL
3013 319802154710 RST SM 0805 470R PM5 COL
3014 319802154710 RST SM 0805 470R PM5 COL
3015 319802154710 RST SM 0805 470R PM5 COL
3016 319802154790 RST SM 0805 47R PM5 COL
3017 232273467509 RST SM 0805 RC12H 75R PM1
3018 319802152220 RST SM 0805 2K2 PM5 COL
3019 319802154790 RST SM 0805 47R PM5 COL
3020 232273467509 RST SM 0805 RC12H 75R PM1
3021 319802154790 RST SM 0805 47R PM5 COL
3022 232273467509 RST SM 0805 RC12H 75R PM1
3023 319802152220 RST SM 0805 2K2 PM5 COL

5001 242253597069 IND FXD SP0305A 4U7 PM10
5002 242253597069 IND FXD SP0305A 4U7 PM10
5003 242253597069 IND FXD SP0305A 4U7 PM10

7001 932214260682 IC AN5870 (MATJ)

1163 ControlPCB

2891 223891015649 CER2 0805 X7R 25V IN PM10
2892 223891015649 CER2 0805 X7R 25V IN PM10
2893 223891015649 CER2 0805 X7R 25V IN PM10

3891 231291511004 RST MFLM MBB0207A 1K PM1
3892 231291515603 RST MFLM MBB0207A 56K PM1
3893 231291514702 RST MFLM MBB0207A 4K7 PM1
3894 231291511503 RST MFLM MBB0207A 15K PM1
3895 231291512403 RST MFLM MBB0207A 24K PM1

5981 242254944197 IND FX 0805 EMI1MHZ 220R

6891 932214603682 LED VS L-3WYGW (KIEL)

1165 313817861951 MHR PCB

2192 203803456229 ELCAP VX 50VS 22U PM20
2193 203803521603 ELCAP GS 63VS 22U PM20
2194 203803511219 ELCAP REA 16V S 220U PM20
2195 222236555223 CAP MPOL 4VS 22N PM10

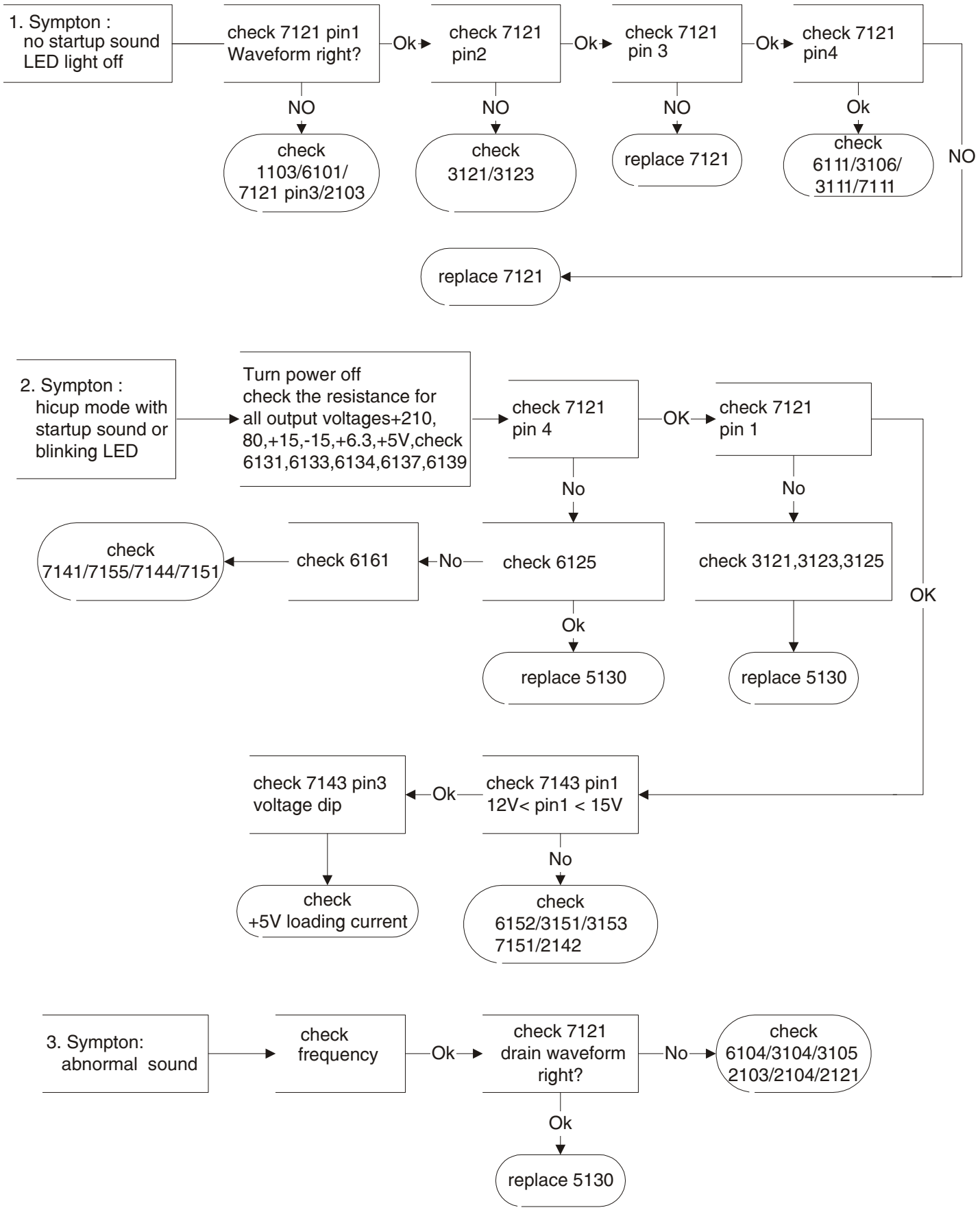
3191 231291519102 RST MFLM MBB0207A 9K1 PM1
3192 231291511503 RST MFLM MBB0207A 15K PM1
3193 212010590779 RST MOX 1W RSS A 270RPM5

5191 313816872691 MAINS HARMONIC COIL
5192 243853598058 IND FXD BEAD EMI1MHZ 80R

6191 319801010010 DIO SIG 1N4148 (COL)
6192 319801010070 DIO SIG BAV21 (COL)
6193 319801010070 DIO SIG BAV21 (COL)
6194 319801010010 DIO SIG 1N4148 (COL)

Repair Flow Chart

A. Power Supply Failure



Repair Flow Chart

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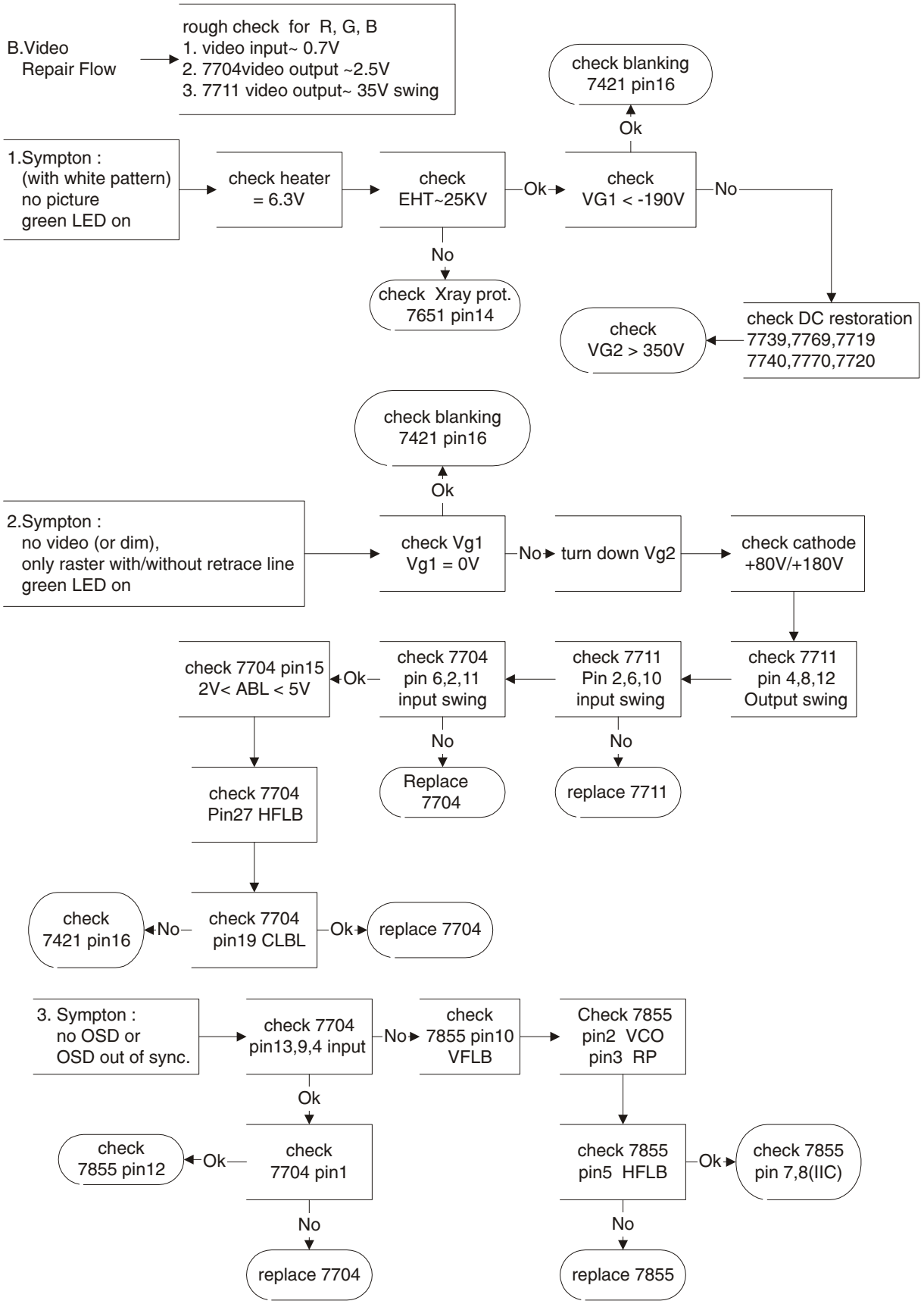

Repair Flow Chart

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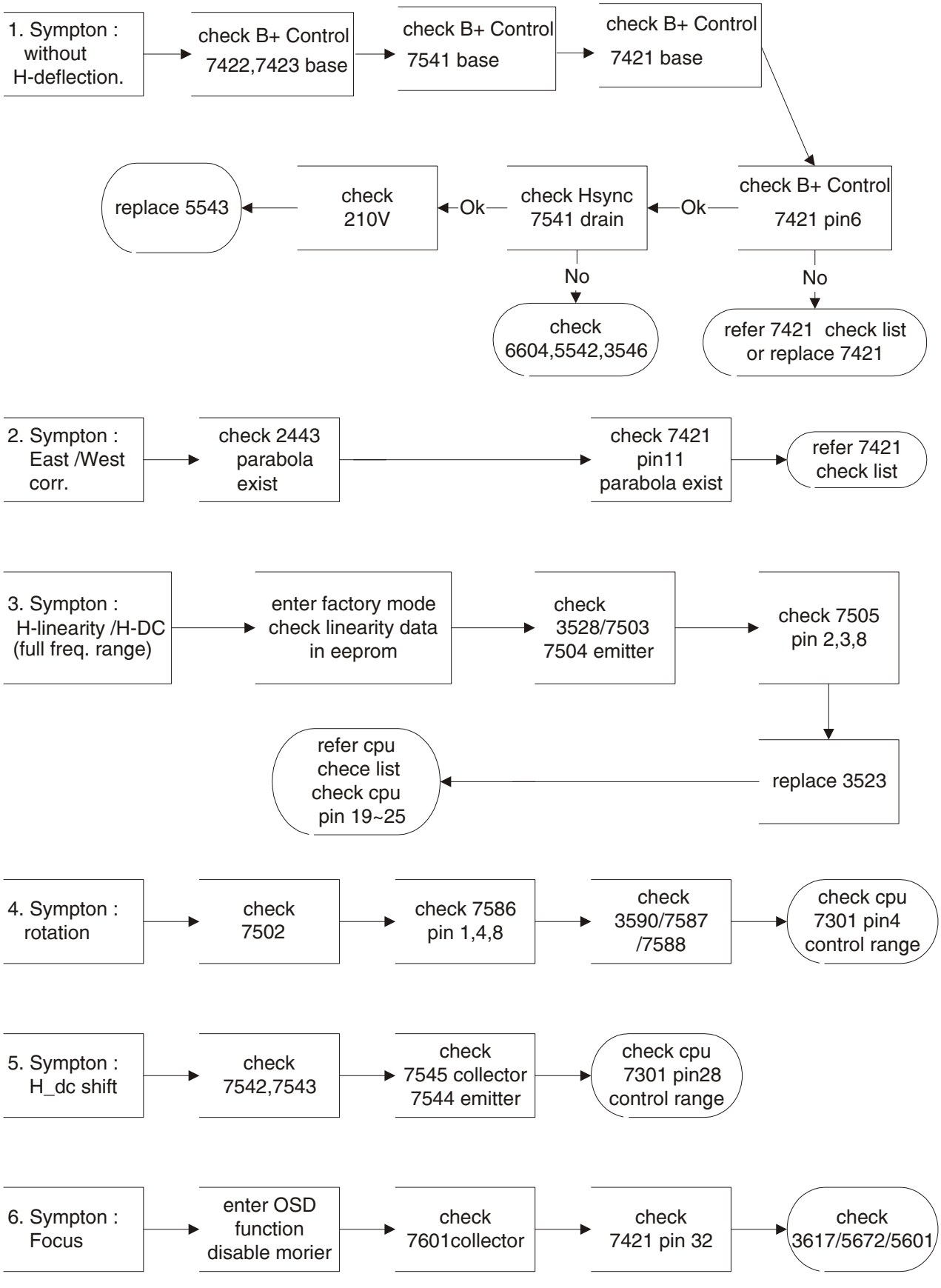
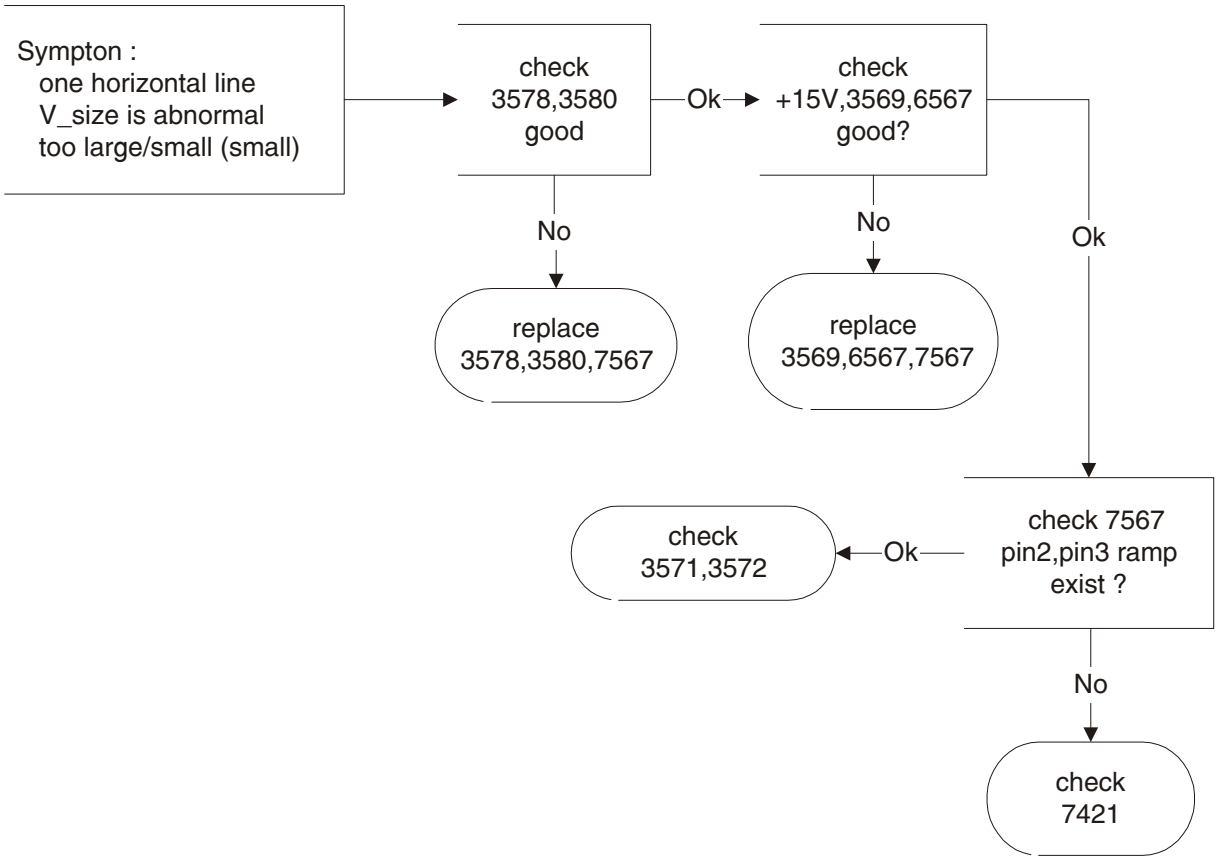
C. Horizontal deflection output repair flow :



D. Vertical Deflection Failure → basic check +15/-15V



Repair Flow Chart

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E. CPU check list

→ Basic Check → check cpu pin6=5V
pin9/pin8=12MhZ
pin12/pin31=gnd

4. H-linearity → check pin4 duty cycle of pwm from 0% to 100%

2. H-Centering → check pin2 duty cycle of pwm from 0% to 100%

19. Blank → check pin19
normal : low
change timing : Hi

Pin10~15 (S6~S1)
S-cap switch → check Q1~Q6
Pin10~15
low : 0
hi :1 →

Hor. Freq.(KHz)	Q6	Q5	Q4	Q3	Q2	Q1
~33.00	1	1	1	1	1	1
33.00~36.00	0	1	1	1	0	1
36.00~42.00	0	1	1	0	0	1
42.00~45.00	0	0	1	1	1	0
45.00~47.50	1	1	1	0	1	0
47.50~49.00	0	1	1	0	1	0
49.00~52.00	0	1	1	0	1	0
52.00~55.00	1	0	0	0	1	0
55.00~58.50	1	1	1	1	0	0
58.50~61.50	1	1	0	1	0	0
61.50~65.00	0	1	0	1	0	0
65.00~70.00	0	0	0	1	0	0
70.00~73.00	1	1	1	0	0	0
73.00~76.00	0	1	1	0	0	0
76.00~82.50	1	0	1	0	0	0
82.50~88.50	0	0	1	0	0	0
88.50~98.00	1	1	0	0	0	0
98.00~102.00	0	1	0	0	0	0
102.00~110.00	1	0	0	0	0	0
110.00~	0	0	0	0	0	0

3. ABL-Adj → check pin3 duty cycle of pwm from 0% to 100%

33,34,40,41
Hsync/Vsync → check sync.
hin=pin40
vin=pin41
hout=pin34
vout=pin33 →

1. Normal
Fvout=Fvin
FHout=FHin
2. sync out of rang
Fhin>116.5KHz
Fvin>168Hz

18. Hunlock → check pin18
normal=Low
blank=Hi

20,27 P.S. LED → check pin20/27 →

power saving	pin20	pin27
normal	hi	hi
off	low	low

Repair Flow Chart

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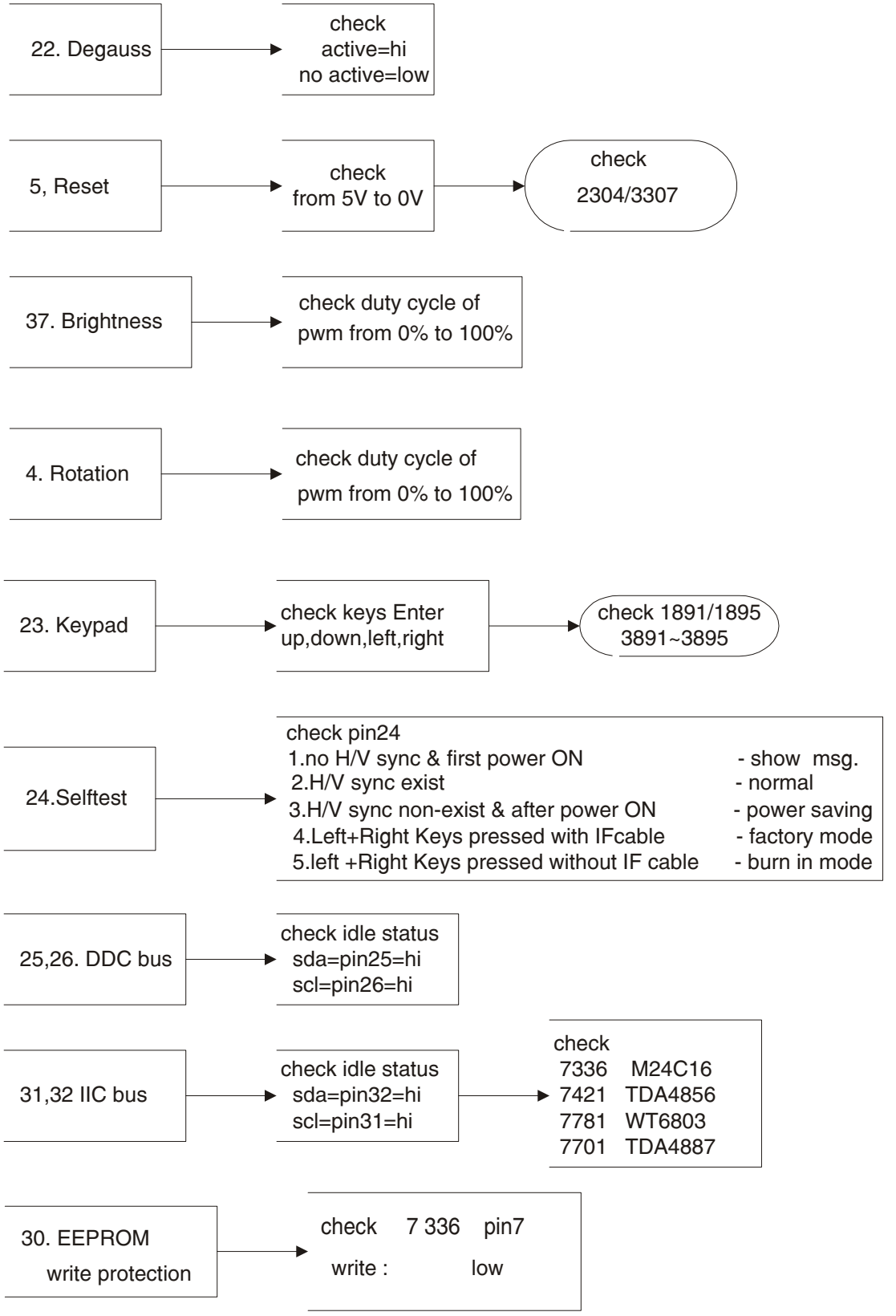
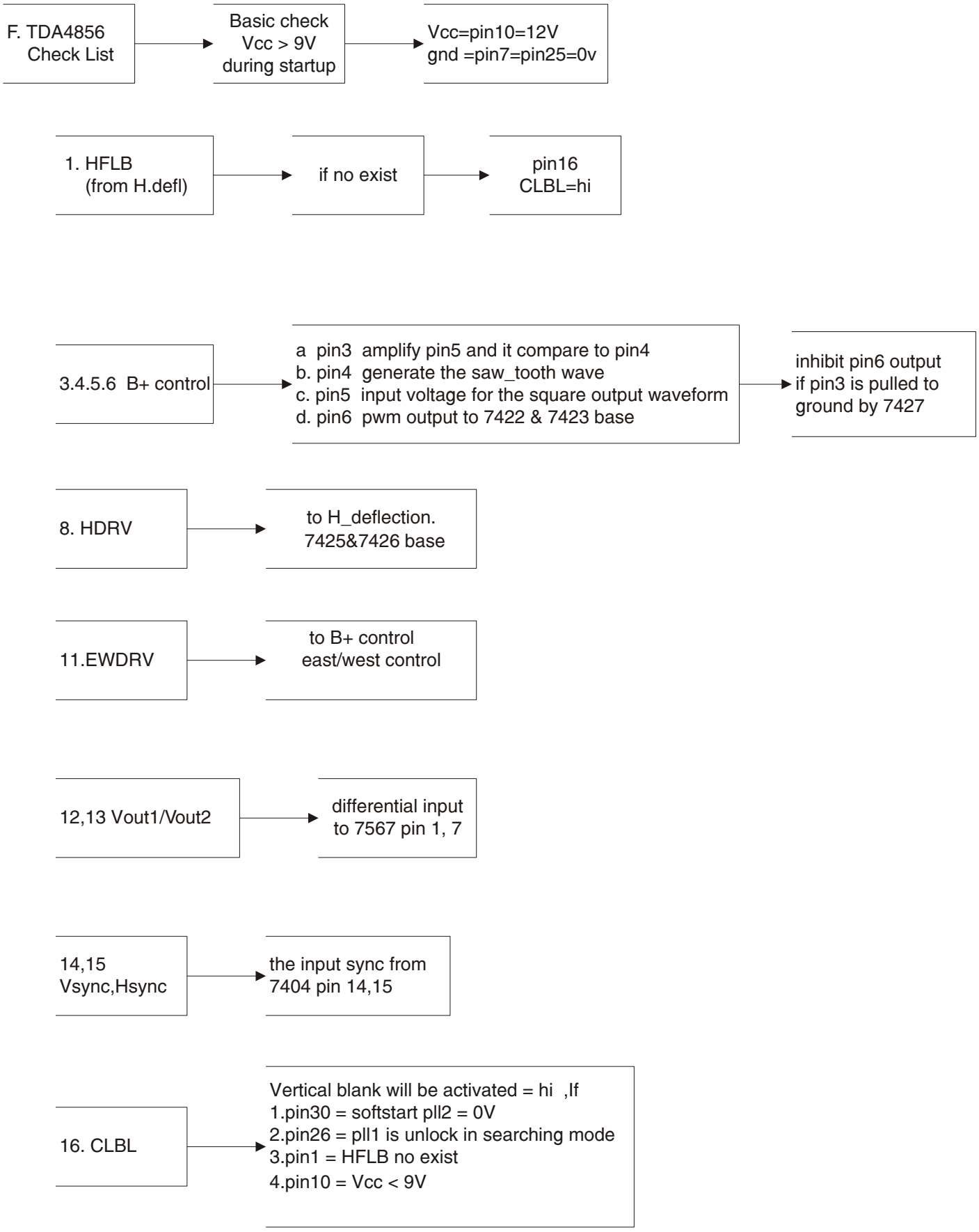


Repair Flow Chart



17. Hunlock → Hunlock pin is floating while pll1(pin26) is unlock in searching mode

18. IIC SCL = hi
19 IIC SDA = hi → initial fail could be these of IC 7421,7701,7781,7336

20 asymmetry EW output → to 7503 pin30 for soft start

21 EHT_compen. → compensate for the V_size owing the load variation

22,23,24
VAGC,VREF,VCAP → pin22 determin the AGC
pin23,pin24 determin frequency → 50Hz< freq. <160Hz

26,27,28,29
Hpll1,Hbuf,Href, Hcap → pin26 determin the pll1 loop filter
pin 27,28,29 H-Freq working range → 30K<freq.<121KHz

30. PLL2 → 1.compare the HFLBand control the phase of HDRV
2.softstart

31 EHT_compen. → compensate for the H_size owing the load variation

32. Focus → to 7603 for the V dynamic focus

PHILIPS

M25P 201B4
GENERAL PRODUCT
SPECIFICATION

. MICRO PROCESSOR-BASED DIGITAL CONTROL WITH 34 FACTORY PRESETS AND 16 USER MODES TO ENSURE PICTURE CONFIGURATIONS ARE ALWAYS MAINTAINED WHEN SWITCH BETWEEN COMMON VIDEO MODES AND USER DEFINED CUSTOM MODES.

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION/ADJUSTMENT

. DDC 2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1920 X 1440 NON-INTERLACED AT 75 HZ

. 21" 0.25 MM AG MASK NF PICTURE TUBE

. EASY TILT & SWIVEL BASE

. FULL RANGE POWER SUPPLY 90 - 264 VAC

. CE ENVIRONMENTAL POLICY with MHR (Option)

. FLAT SQUARE TUBE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. LOW EMISSION TCO 99

. MOIRE' CANCELLATION

. AUTO CALIBRATION FUNCTION

. sRGB

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4.14 Brightness uniformity
4.15 White color adjustment
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PHILIPS

1.0 FOREWORD

This specification describes a 21" high resolution digitally controlled auto-scan color monitor with max. resolution up to 1920x1440/75Hz non-interlaced.

2.0 PRODUCT PROFILE

This display monitor unit is a complete color display monitor enclosed in PHILIPS global styling cabinet which has an integrated tilt and swivel base.

2.1 CRT

Type NR.	: M51QBN291X115 (SAMSUNG)
Dimensions	: 21 FS
Phosphor Pitch	: 0.25 mm
Phosphor	: P22
Mask	: INVAR MASK
Deflection angle	: 90 deg
Light transmission	: 43%
Surface of plate	: AGARS
EHT	: 27.0 KV
Useful screen (mm)	: 406.4 X 304.8

2.2 Scanning frequencies

Hor. : 30 - 115KHz Ver. : 50 - 160 Hz

2.3 Video dot rate : 297MHz

2.4 Power input : 90 - 264 Vac, 47-63 Hz

2.5 Power consumption : 115W Typ. / 130 W Max.

2.6 Dimensions : 482(W) x 476(H) x 467(D) mm

2.7 Weight : 24.0 ¡Ó 0.5 kg

2.8 Functions :

(1) R/G/B separate analog inputs, H/V composite sync,

(2) Automatic (Power on) and manual degaussing circuit.

2.9 Ambient temperature : 0 - 35 C

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2.10 Regulatory compliance:
(1) Safety : UL 1950
: CSA C22.2 NO. 950
: IEC950/ EN60950

(2) EMI : FCC PART 15 class B
: D.O.C. Class B
: EN55022 Class B
: CE mark
: CNS 13438
EMS : EN61000-4-3(80% 1KHz AM modulation) picture jitter < 2mm

(3) X-RAY Radiation requirement / regulation
: DHHS 21 CFR Subchapter J.
: ROEV / 08.01.1987

(4) Low Radiation
: TCO99

(5) Environmental
: Per CE and BU policy

(6) Ergonomic Requirements
: ZH 1/618
: EN 9241-3/ ISO 9241-3 (7/92) / ISO 9241-8

(7) Harmonic distortion: Meet IEC 1000-3-2.

3.0 Electrical characteristics

3.1 Interface signals
The input signals can be applied in two different modes :

1). Video, Hsync., Vsync.
2). Video, Composite Sync

Video : 0.7 Vp-p, input impedance, 75 ohm

Sync. : Separate sync TTL level, input impedance 2k2 ohm
Hor. sync Positive/Negative
Ver. sync Positive/Negative

Composite sync TTL level, input impedance 2k2 ohm
Positive/Negative

3.2 Interface

3.2.1 Cable

The input signals are applied to the display through a detachable shielded cable.

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Length : 1.5 m +/- 50 mm (detachable)

Connector type : 15 pin D-Sub male to 15 pin D-Sub male, blue
IBM PS/2 standard (3 rows)
with DDC 2B pin assignments

pin assignments :

pin no.	
1	Red video input
2	Green video input
3	Blue video input
4	Optional - connected to pin 10
5	Not connected
6	Red video ground
7	Green video ground
8	Blue video ground
9	+5V
10	Sync ground
11	Optional - connected to pin 10
12	Bi-directional data (SDA)
13	H/H+V sync
14	V sync (VCLK)
15	Data clock (SCL)

2002-03-14

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3.2.2 Adaptor 15 pin D-standard (2 rows male) to 15 pin D-sub (female) for Apple Macintosh II use.(Option)

pin assignments :

pin no	15 Pin D-standard
1	RED GND
2	RED VIDEO
3	COMPOSITE SYNC
4	SYNC GND
5	GREEN VIDEO
6	GREEN GND
7	NC
8	NC
9	BLUE VIDEO
10	NC
11	NC
12	NC
13	BLUE GND
14	NC
15	NC

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3.2.3 Software control functions via OSD/control

- Adjustable functions:

Main Controls
Language
Zoom
Adjust horizontal
Adjust vertical
Adjust shape
Adjust color
Reset to factory settings
Extra Controls
Close Main Controls
Move selection then

Language

-Language : multi-language(at least 5 language)

Input

-Input signal selection

Zoom

- Zoom

Adjust horizontal

-Adjust position

-Adjust size

Adjust vertical

-Adjust position

-Adjust size

Adjust shape

-Adjust side curve

Pincushion

Balanced

-Adjust side angles

Trapezoid

Parallelogram

-Rotate image

Rotate

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Adjust color
-9300K for general use
-6500K for image management
-5500K for photo retouch
-sRGB
- User preset

Reset to factory settings
- No
-Yes

Extra Controls

Adjust moir
Horizontal
Vertical

!

degauss

-
-Auto calibrate

3.3 Timing requirement

3.3.1 Mode storing capacity

Total modes available	: 50
(1) Factory modes	: 34 (Including 7 preset mode)
(2) User modes	: 16

3.3.2 Factory preset timings

The factory settings of size and centering are
according to the reference timing charts (see fig-8, fig-9)

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MODE NO.	1	2	3	4
RESOLUTION	640 x 480	720 x 400	640 x 480	640 x 480
Dot clock(MHz)	25.175	28.321	31.500	31.500
f h	31.469 kHz	31.468 kHz	37.500 KHz	37.861 kHz
A (us)	31.778	31.778	26.667	26.413
B (us)	3.813	3.813	2.032	1.270
C (us)	1.907	1.907	3.810	3.810
D (us)	25.422	25.423	20.317	20.317
E (us)	0.636	0.325	0.508	1.016
f v	59.941 Hz	70.084 Hz	75.000 Hz	72.810 Hz
O (ms)	16.683	14.268	13.333	13.735
P (ms)	0.064	0.064	0.080	0.079
Q (ms)	1.049	1.112	0.427	0.528
R (ms)	15.253	12.711	12.800	12.678
S (ms)	0.317	0.382	0.026	0.45
SYNC. H/V POLARITY	- / -	- /+	- /-	- / -
SEP . SYNC	Y	Y	Y	Y

MODE NO.	5	6	7	8
RESOLUTION	800x600	640 x 480	800 x 600	800 x 600
Dot clock(MHz)	40.000	36.000	49.500	50.000
f h	37.879 kHz	43.269 kHz	46.875 kHz	48.077 kHz
A (us)	26.400	23.111	21.333	20.800
B (us)	3.200	1.556	1.616	2.400
C (us)	2.200	2.222	3.232	1.280
D (us)	20.000	17.778	16.162	16.000
E (us)	1.000	1.555	0.323	1.12
f v	60.317Hz	85.008 Hz	75.000 Hz	72.188 Hz
O (ms)	16.579	11.763	13.333	13.853
P (ms)	0.106	0.069	0.064	0.125
Q (ms)	0.607	0.578	0.448	0.478
R (ms)	15.840	11.093	12.800	12.480
S (ms)	0.026	0.023	0.021	0.77
SYNC. H/V POLARITY	+ / +	- / -	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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CLASS NO.

21" AUTO SCAN CMTR

TYPE : 201B40/00C-M25P-201B4

BRAND : PHILIPS

8639 000 11832

2002-01-23

NAME ALEX CHEN | SUPERS. | 31 | 590 — 10 | 10 | A4

TY | CHECK | DATE 2002-01-23

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MODE NO.	9	10	11	12
RESOLUTION	1024 x 768	832 x 624	640 x 480	800 x 600
Dot clock(MHz)	65.000	57.280	40.500	56.250
f h	48.363 kHz	49.722 kHz	50.628 kHz	53.674 kHz
A (us)	20.677	20.110	19.752	18.631
B (us)	2.092	1.117	1.580	1.138
C (us)	2.462	3.910	1.975	2.702
D (us)	15.754	14.520	15.802	14.222
E (us)	0.369	0.563	0.395	0.569
f v	60.004 Hz	74.546 Hz	100.10 Hz	85.061 Hz
O (ms)	16.666	13.410	9.995	11.756
P (ms)	0.124	0.060	0.059	0.056
Q (ms)	0.600	0.784	0.435	0.503
R (ms)	15.880	12.550	9.481	11.179
S (ms)	0.062	0.016	0.020	0.018
SYNC. H/V POLARITY	- / -	+ /+	- / -	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	13	14	15	16
RESOLUTION	1024 x 768	1024 x 768	800 x 600	1280 x 1024
Dot clock(MHz)	75.000	78.750	67.500	108.000
f h	56.476 kHz	60.023 kHz	63.923 kHz	63.981 kHz
A (us)	17.707	16.660	15.644	15.630
B (us)	1.813	1.219	0.948	1.037
C (us)	1.920	2.235	2.370	2.296
D (us)	13.653	13.003	11.852	11.852
E (us)	0.321	0.203	0.474	0.445
f v	70.069 Hz	75.029 Hz	100.00 Hz	60.020 Hz
O (ms)	14.272	13.328	9.997	16.661
P (ms)	0.016	0.050	0.047	0.047
Q (ms)	0.513	0.466	0.548	0.594
R (ms)	13.599	12.795	9.387	16.005
S (ms)	0.054	0.017	0.015	0.015
SYNC. H/V POLARITY	- / -	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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CLASS NO.

21" AUTO SCAN CMTR

TYPE : 201B40/00C-M25P-201B4

BRAND : PHILIPS

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MODE NO.	17	18	19	20
RESOLUTION	1024 x 768	1152 x 870	1600 x 1200	1280 x1024
Dot clock(MHz)	94.500	100.000	162.000	135.00
f h	68.677 kHz	68.681 kHz	75.000 kHz	79.976 kHz
A (us)	14.561	14.560	13.333	12.504
B (us)	1.016	1.280	1.185	1.067
C (us)	2.201	1.440	1.877	1.837
D (us)	10.836	11.520	9.877	9.481
E (us)	0.508	0.32	0.394	0.119
f v	84.997 Hz	74.979 Hz	60.000 Hz	75.024 Hz
O (ms)	11.765	13.333	16.667	13.329
P (ms)	0.044	0.044	0.040	0.038
Q (ms)	0.524	0.568	0.613	0.475
R (ms)	11.183	12.678	16.000	12.804
S (ms)	0.014	0.043	0.014	0.012
SYNC. H/V POLARITY	+ / +	- / -	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	21	22	23	24
RESOLUTION	1600 x 1200	1792 x 1344	1856 x 1392	1600 x 1200
Dot clock(MHz)	175.500	204.750	218.250	189.000
f h	81.250 kHz	83.640 kHz	86.333 kHz	87.500 kHz
A (us)	12.308	11.956	11.583	11.429
B (us)	1.094	0.977	1.026	1.016
C (us)	1.732	1.602	1.489	1.608
D (us)	9.117	8.752	8.504	8.466
E (us)	0.365	0.625	0.564	0.339
f v	65.000 Hz	59.999 Hz	59.995 Hz	70.000 Hz
O (ms)	15.385	16.667	16.668	14.286
P (ms)	0.037	0.036	0.035	0.034
Q (ms)	0.566	0.550	0.498	0.526
R (ms)	14.769	16.069	16.124	13.715
S (ms)	0.013	0.012	0.011	0.011
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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GENERAL PRODUCT SPECIFICATION

MODE NO.	25	26	27	28
RESOLUTION	1920 x 1440	1280 x 1024	1600 x 1200	1600 x 1200
Dot clock(MHz)	234.000	157.500	202.500	229.500
f h	90.000 kHz	91.146 kHz	93.750 kHz	106.250 kHz
A (us)	11.111	10.971	10.667	9.412
B (us)	0.889	1.016	0.948	0.837
C (us)	1.470	1.422	1.501	1.325
D (us)	8.205	8.127	7.901	6.972
E (us)	0.547	0.406	0.317	0.278
f v	60.000 Hz	85.024 Hz	75.000 Hz	85.000 Hz
O (ms)	16.667	11.761	13.334	11.765
P (ms)	0.033	0.033	0.032	0.028
Q (ms)	0.622	0.483	0.491	0.433
R (ms)	16.000	11.234	12.800	11.294
S (ms)	0.012	0.011	0.011	0.01
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	29	30	31	32
RESOLUTION	1792 x 1344	1856x1392	1920x1440	1792x1344
Dot clock(MHz)	261.000	279.713	297	281.014
f h	106.270 kHz	109.950 kHz	112.5 kHz	114.048
A (us)	9.410	9.095	8.889	8.768
B (us)	0.828	0.715	0.754	0.712
C (us)	1.349	1.23	1.185	1.196
D (us)	6.866	6.635	6.465	6.377
E (us)	0.367	0.515	0.485	0.483
f v	74.997 Hz	75Hz	75Hz	81Hz
O (ms)	13.334	13.333	13.333	12.346
P (ms)	0.028	0.027	0.027	0.026
Q (ms)	0.649	0.636	0.636	0.526
R (ms)	12.647	12.66	12.66	11.785
S (ms)	0.01	0.01	0.008	0.009
SYNC. H/V	+ / +	+ / +	+ / +	+ / +

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MODE NO.	33	34
RESOLUTION	1280x1024	1600x1200
Dot clock(MHz)	202.815	254.446
f h	115.236kHz	115.238kHz
A (us)	8.678	8.678
B (us)	0.710	0.692
C (us)	1.183	1.195
D (us)	6.311	6.288
E (us)	0.474	0.503
f v	106.7Hz	91.758Hz
O (ms)	9.372	10.899
P (ms)	0.026	0.026
Q (ms)	0.451	0.451
R (ms)	8.886	10.413
S (ms)	0.009	0.009
SYNC. H/V POLARITY	+ / +	+ / +
SEP . SYNC	Y	Y

3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 115 KHz
Retrace time : 1.8 sec (typical)

3.3.4 Vertical scanning

Sync polarity : Positive or Negative
Scanning frequency : 50 - 160 Hz

3.4 Power input connection

Power cord length : 1.5 M
Power cord type : 3 leads detachable power cord with protective earth plug.

3.5 Video amplifiers

Rise time/Fall time : 4.0 / 4.5 ns
(excluding rise/fall time due to test pattern & test probe)
Overshoot/undershoot : Max. 12%
Black level shift : Max. 3%
Sag : Max. 5%

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3.6 Degaussing

An automatic degaussing circuit is provided and required no intervention. The degaussing is activated at the time of switch-on and power saving wake up or switch-on again after switched-off for longer than 30 minutes. Manual degaussing is provided to eliminate any color impurity.

3.7 Requirement for low emission

(1) Electro static potential : < 0.5 KV
(2) Alternating Elec. field

ELF 5 - 2 Khz : 10.0 V/M
VLF 2 - 400 KHz : 1.0 V/M

(3) Magnetic field

ELF 5 - 2 Khz : 200 nT
VLF 2 - 400 Khz : 25 nT

3.8 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
OFF	No Pulse	Pulse	< 2 W	Yellow
OFF	Pulse	No Pulse	< 2 W	Yellow
OFF	No Pulse	No Pulse	< 2 W	Yellow

Compliant with TCO99 power saving requirement
EPA energy star requirement
E2000

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3.9 Display identification

In accordance with VESA Display Channel Standard and having DDC 2B capability

4.0 Visual characteristics

4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

(1) Input signal: As defined in 3.3, 1024 x 768 non-interlaced mode (68.7 KHz), signal sources must have 75 ohm output impedance, with 0.7Vpp video level.

(2) Luminance setting: controls to be set to 20 ft-lb with full screen 100% duty cycle white signal.

(3) Warm up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 20 5 c

(6) Ambient magnetic field: no special ambient magnetic field existed. (the ac leakage flux, dc flux caused by transformer magnet, etc.)

(7) CRT face: East

4.2 Resolution

Inspection modes :

Mode	Resolution	H. freq. /V. freq	Standard
1.	1024 x 768	60.023Khz/75.029Hz	(VESA/75)
2.	1024 x 768	68.677Khz/84.997Hz	(VESA/85)
3.	1280 x 1024	79.976Khz/75.024Hz	(VESA/75)
4.	1280 x 1024	91.146Khz/85.024Hz	(VESA/85)
5.	1600 x 1200	93.75Khz/75.000Hz	(VESA/75)
6.	1600 x 1200	106.25Khz/85.000Hz	(VESA/85)
7.	1792 x 1344	106.3Khz/75.000Hz	(VESA/75)
8.	1920x1440	112.5Khz/75Hz	(VESA/75)

!

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4.3 Brightness

Color Temp	Brightness control	Contrast control	White Square (see fig-5)	Full white
	MIN	MIN	-	-
	CENTER	MIN	-	< 0.1 ft-lb
@9300K	CENTER	MAX	¡ 32 ft-lb	Ù 30 ft-lb ¡ Ù
@6500K	CENTER	MAX	¡Ù28 ft-lb	-
@5500K	CENTER	MAX	¡Ù25 ft-lb	-
@9300K	MAX	MAX	-	-

4.3.1 sRGB
Once press RGB function on OSD, the luminance shall be changed to 23+/- 3ft-lb and color temperature is matching to 6500°K, at white square pattern.

4.4 Flagwaving - jitter
Less then 0.15mm.

4.5 Image size

4.5.1 Actual display size
The dimensions of the data area, measured along the picture center of horizontal and vertical axis of the screen, are listed below: (see Fig 1)
(392 +/- 4 mm) X (294 +/- 4 mm)

4.5.2 Max scan size
Maximum active video size should be not smaller than mask opening. The mask opening is 406.4 x 304.8 mm.

4.6 Image centering deviation
|A-B| and |C-D| <= 6 mm, please see Fig 2

4.7 Picture shift range
H-shift range : total 30 mm.
V-shift range : total 15 mm.

4.8 Display dimension stability
Due to brightness : 1.0 %
Due to aging : 1.0 %
Due to mains voltage : 1.0 %
Dynamic : < 1mm

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4.10 Picture tilt
1mm (see Fig. 3)
User adjust range for tilt : 1 deg. min.

4.11 Image non-linearity
Horizontal:

Max. - Min. / Max. + Min. x 100 %	8 %	(30 - 31.5 KHz)	
	7 %	(31.6 - 64.0 KHz)	
	5 %	(64.1 - 115 KHz)	
For any two adjacent blocks	5 %	(30 - 31.5 KHz)	
	4 %	(31.6 - 64.0 KHz)	
	3 %	(64.1 - 115 KHz)	

Vertical : = 5 %
For any two adjacent blocks 3 %

4.12 Misconvergence

The maximum convergence error should be measured on a white line and represents the maximum distance between the center of the red, green and blue lines over the whole image area.

Max. misconvergence :
(Picture area 355X265 See Fig. 6)

Zone	31.5Khz	31.6 67Khz	>67Khz
B	0.50	0.45	0.40
A	0.40	0.35	0.30
C	0.15	0.15	0.15

4.13 Focus check

First, adjust brightness to 50 % position and contrast to max., and then generate "" characters for 1024 lines to cover entire picture area (picture size is shown in sect. 4.5). Characters should be clearly identified at the center and all corners. Character size is shown in Fig. 7.

4.14 Brightness uniformity

With an active video area full white pattern adjusted to brightness 50% and contrast 100%, no portion of the pattern shall be less than 75 % of the luminance measured at the CRT center.

4.15 White color adjustment
There are three factory preset white color 9300 K, 6500 K and 5500 K.

Apply full white pattern, with brightness in 50 % position and the contrast control at max. position.
The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

9300 K CIE coordinates X = 0.283 0.020

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9300 K CIE coordinates X = 0.283 0.020
Y = 0.297 0.020

6500 K CIE coordinates X = 0.313 0.020
Y = 0.329 0.020

5500 K CIE coordinates X = 0.332 0.020
Y = 0.347 0.020

4.16 White uniformity

Set the brightness control at center 50 % position, then adjust the contrast control to 100%. The color coordinate at any point on the screen should be :

X = X (center) 0.015
Y = Y (center) 0.015

4.17 Color tracking on full white pattern

Adjust the contrast control from max. to min.(with brightness at click position). The color coordinates should not deviate more than:

x = x (center) +/- 0.015
y = y (center) +/- 0.015

4.18 Purity

Conditions: With full color pattern, with brightness control at 50 % position and contrast control in maximum, under the specific destinations of earth magnetic environments.

4.19 Moire

At 15FL contrast & moir is acceptable if not over 1/3 area..

4.20 Ringing

Apply a full white pattern at 107KHz, set horizontal raster symmetrically by raster shift press the OSD button & select horizontal position shift the image to the left edge of the raster. the yoke ring should less than 10mm.

4.21 Tapping test

No interference does disturb the monitor picture during tapping test with a rubber hammer.

4.22 Distance between two monitors

Two monitors of the same monitor type which were conducted with different Modes or frequencies, don t show any inference in a distance down to 25cm.

5.0 Mechanical characteristics

5.1 Controls

Front side :
- AC power switch
- OSD function key

Rear :
- D- sub / BNC
- Power cord socket

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4.21 Tapping test
No interference does disturb the monitor picture during tapping test with a rubber hammer.

4.22 Distance between two monitors
Two monitors of the same monitor type which were conducted with different Modes or frequencies, don't show any inference in a distance down to 25cm.

5.0 Mechanical characteristics

5.1 Controls

Front side:
- AC power switch
- OSD function key

Rear :
- D-sub / BNC
- Power cord socket

5.2 Unit dimension / Weight
Set dimension (incl. pedestal) : 482(W) x 476(H) x 467 D) mm
Net weight : 24 ¡Ó 0.5 Kg

5.3 Tilt and swivel base
The display should be equipped with a tilt & swivel device allowing rotation over an angle of 90 degree left or rightward and for a tilt of -5 degree to +15 degree with respect to the horizontal position.

5.4 Transportation packages

5.4.1 Shipping dimension/Weight
Carton dimension : 557(W) x 627(H) x 596(D) mm
Gross weight : 28 .0 ¡Ó 0.5Kg

5.4.2 Block unit / Polarization

layers/block	sets/layer	sets/block unit
3	4	12

blocks/container	
20 feet	40 feet
8	20

6.0 Environmental characteristics
The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

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6.1 Susceptibility of display to external environment

Operating

- Temperature : 0 to 35 degree C
- Humidity : 10 to 90% (w/o condensation)
- Altitude : 10,000 ft

Storage

- Temperature : -40 to 60 degree C
- Humidity : 5 to 95% (w/o condensation)
- Altitude : 40,000 ft
- Condensation : should be prevented

6.2 Transportation tests

TEST ITEM	TEST CONDITION	STANDARD REFERENCE
1. PACKAGED TEST :		
1.1Packaged random vibra. test 4 sets	*5 ~ 200 Hz, 0.73 Grms , *30 min/axis, 3 axes.,	Ref. ASTM D-4169
1.2 Drop test *4 sets after random vibra. Test	Drop Height:45 CM *Sequence:1C-3E-6F , 10 drops,	NSTA height increment one level NSTA
1.3 Cold drop test (Only for reference) 2 sets	*-10 C for 16 hours,recovery time afte cold test:+/- 5minutes *Gross weight drop height: 30 CM *Sequence:1C-3F , 4drops ,	UN-D1400 NSTA
2. UN-PACKAGED VIBRATION TEST :		
2.1 Operating random vibra. test 2 sets	*5~500 Hz, 0.25 Grms, *30 min/axis 3 axes.	Ref.OEM spec.
2.2 Shock test(half sine) 2 sets	a.100 G , < 3 msec , 6 shocks *G value measurement filter:330Hz #Exclude CRT impurity (Only for reference)	Ref.OEM spec

TOTAL : 10 sets

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6.3 Display disturbances from external environment
According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 Ionizatic radiation
Completely fulfilled International Commission of
Radiological Protection (ICRP) requirement 0.5 mR/hrs.

7.0 Reliability

7.1 Mean Time Between Failures
MTBF to be calculated according to military standard MIL-HDBK-217C.
MTBF > = 75,000 hrs (excluding CRT)

$$\text{Practice of MTBF} = \frac{\text{Total hrs (power on) x Total sets}}{\text{NO. of failed sets}}$$

8.0 Quality assurance requirements

8.1 Acceptance test
according to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.50 (minor)
(please also refer to annual quality agreement)
Customer acceptance criteria : UAW0377/00

9.0 Serviceability
The serviceability of this monitor should fulfill the
requirements which are prescribed in UAW-0346 and must
be checked with the check list UAT-0361.

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GENERAL PRODUCT SPECIFICATION

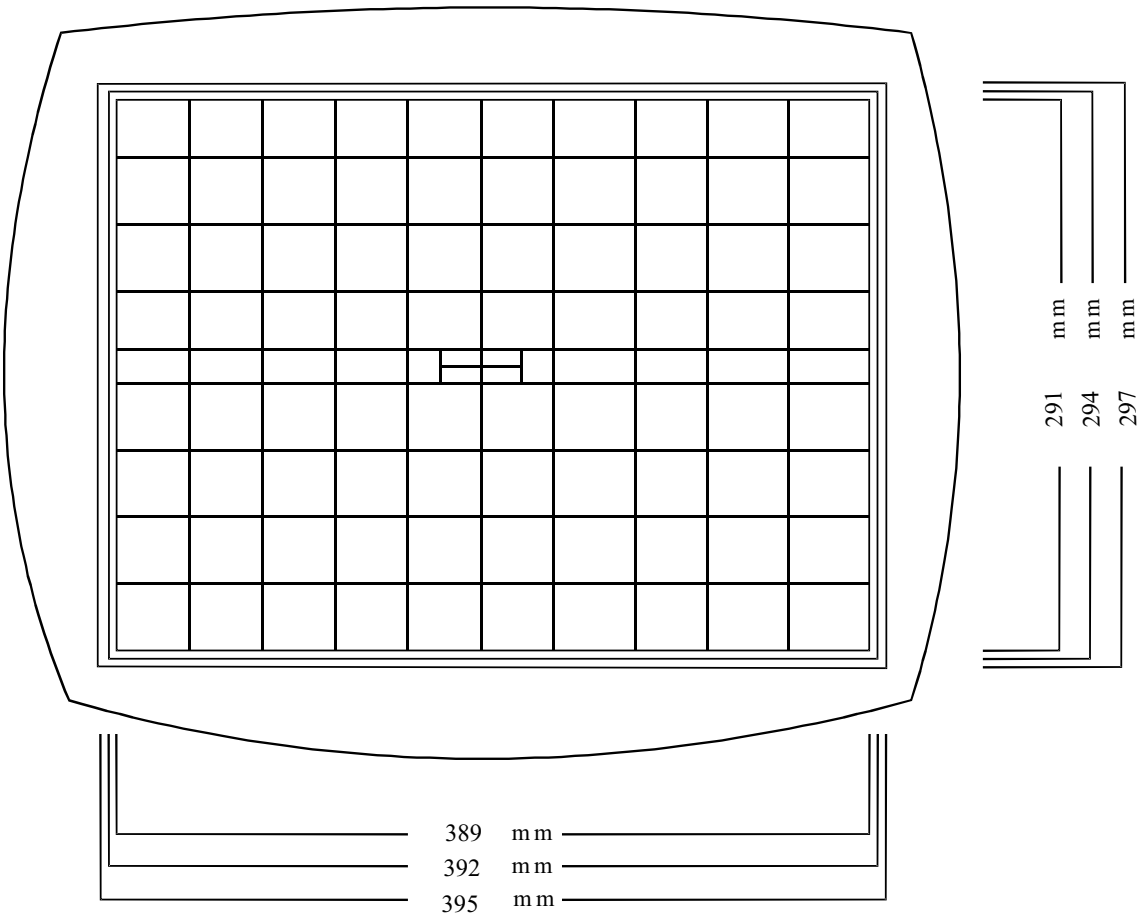

FIG-1 IMAGE DIMENSION

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CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS			8639 000 11832			
2002-01-23							
NAME ALEX CHEN	SUPERS.		31	590 — 23	10		A4
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2838 100 05424

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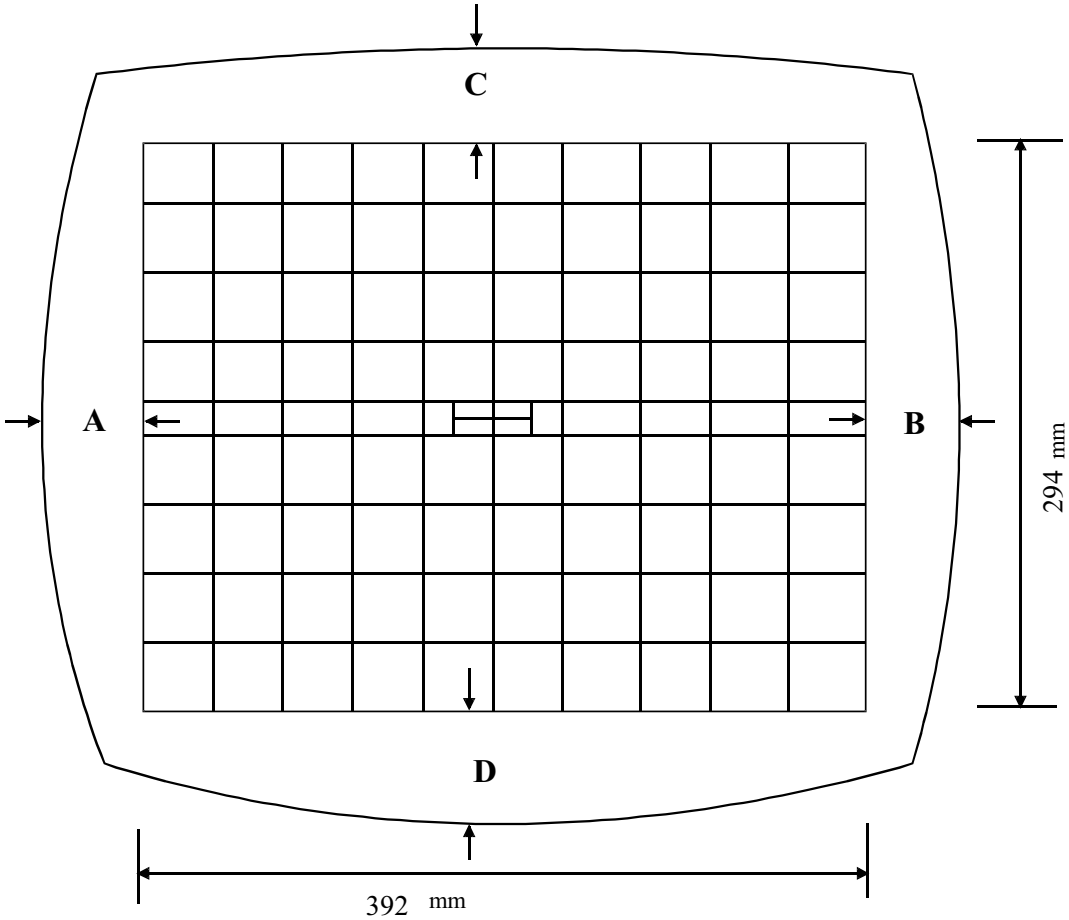

|A-B| AND |C-D| < 6 mm

FIG-2 IMAGE CENTERING

CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS		8639 000 11832			
2002-01-23						
NAME ALEX CHEN	SUPERS.	31	590 — 24	10		A4
TY CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				

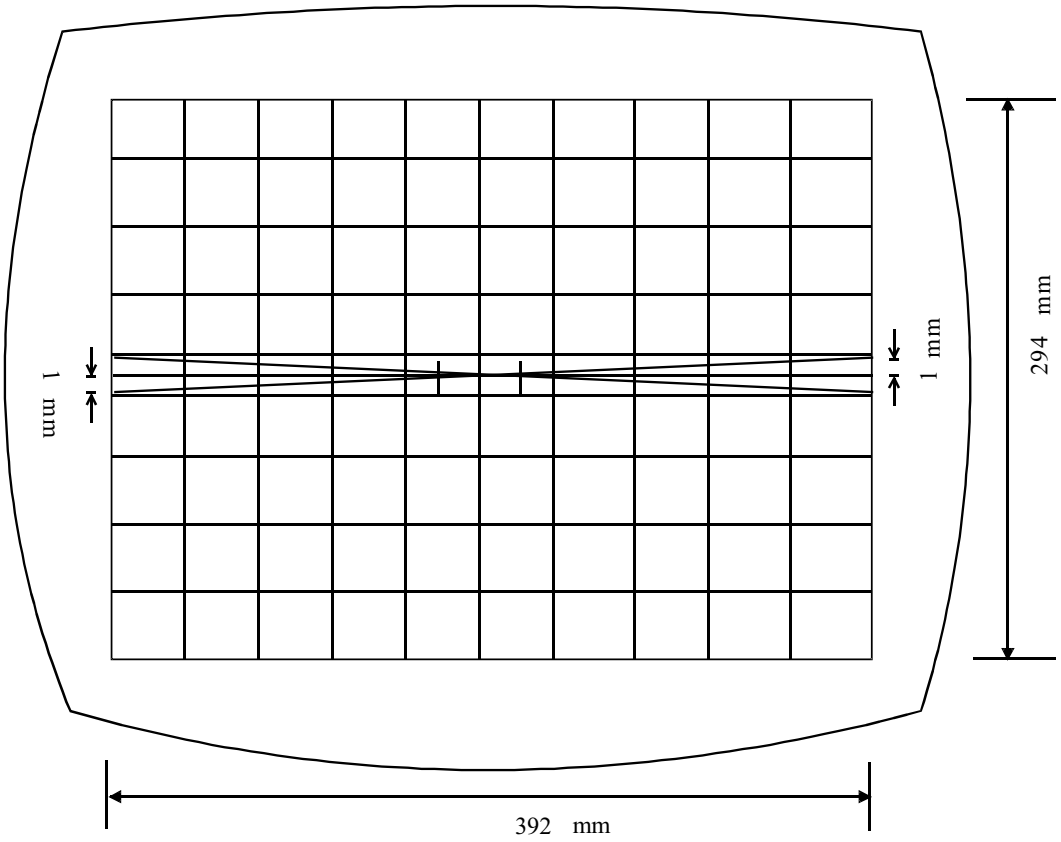

FIG-3 IMAGE ROTATION

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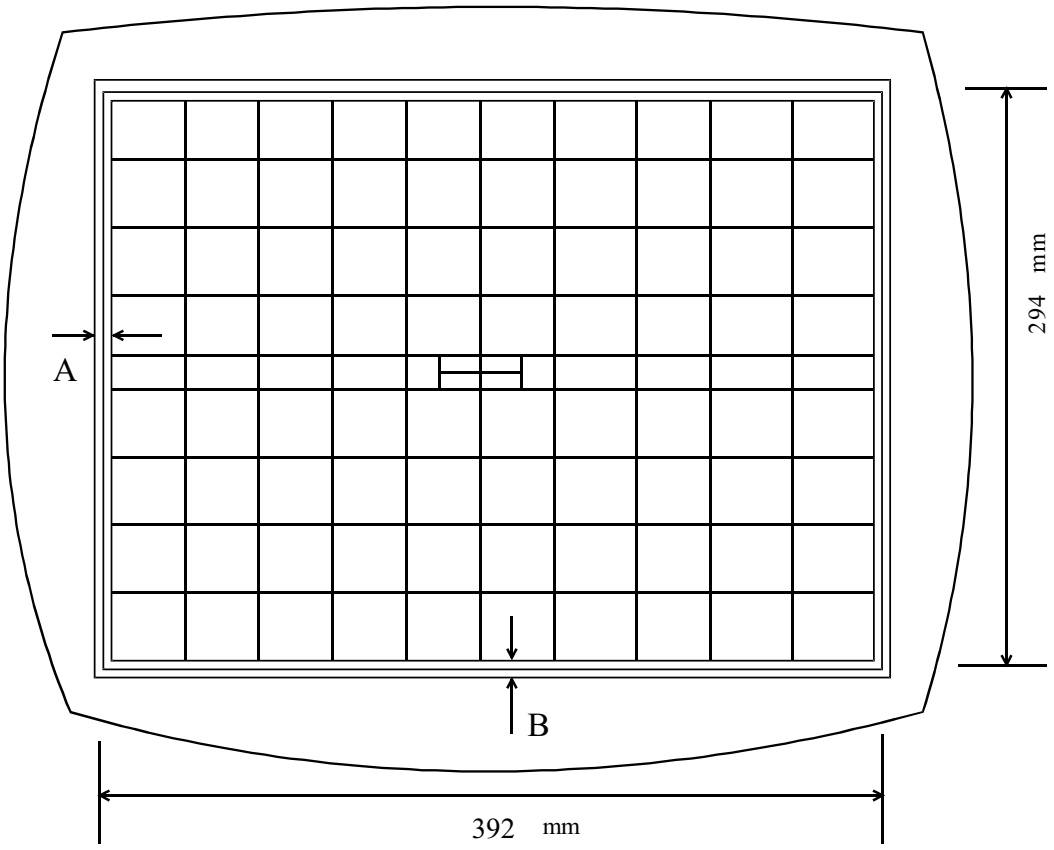
CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS		8639 000 11832			
2002-01-23						
NAME ALEX CHEN	SUPERS.	31	590 — 25	10		A4
TY / CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				



A = B = 2.5 mm

FIG-4 IMAGE GEOMETRY

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CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS	8639 000 11832				
2002-01-23						
NAME ALEX CHEN	SUPERS.	31	590 — 26	10		A4
TY CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				

PHILIPS

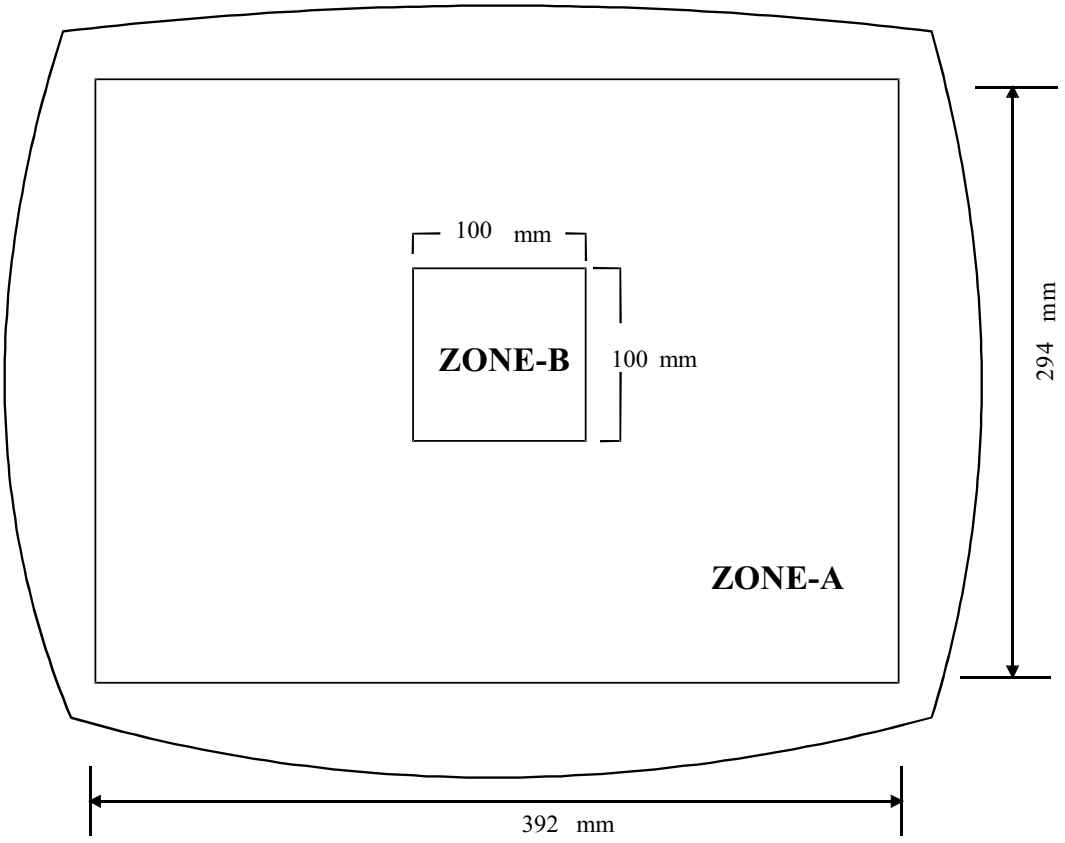

FIG-5 BRIGHTNESS AND CONTRAST MEASUREMENT AREA

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PHILIPS

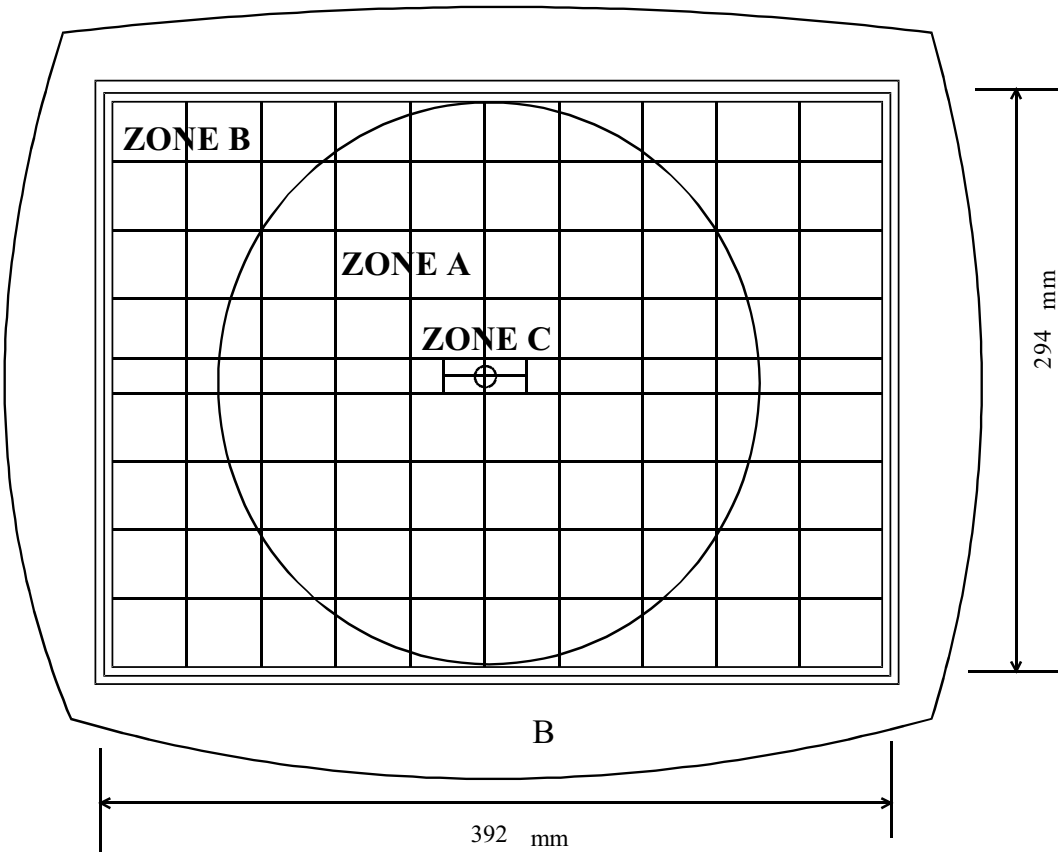

FIG-6 MISCONVERGENCE

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CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS		8639 000 11832					
2002-01-23								
NAME ALEX CHEN	SUPERS.	31	590 — 28	10		A4		
TY CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.						

PHILIPS

1 BYTE = 8BITS

LINE	HEX.DATA		7	6	5	4	3	2	1	0
0	0	0								
1	0	0								
2	3	C			■	■	■	■		
3	4	2		■					■	
4	4	2		■					■	
5	5	E		■		■	■	■	■	
6	5	2		■		■			■	
7	5	2		■		■			■	
8	5	C		■		■	■	■		
9	4	0		■						
A	3	C			■	■	■	■		
B	0	0								
C	0	0								
D	0	0								
E	0	0								
F	0	0								

Fig 7 CHARACTER FORMAT FOR FOCUS CHECK

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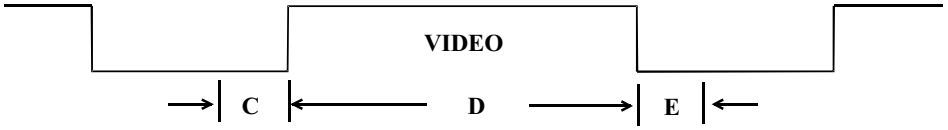
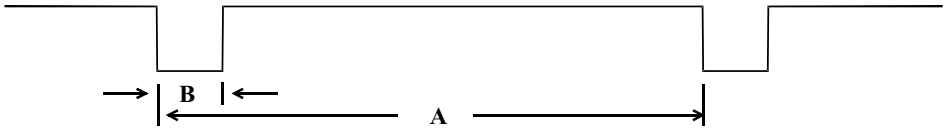
CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS	8639 000 11832
2002-01-23		
NAME ALEX CHEN	SUPERS.	31 / 590 — 29 / 10 / A4
TY / CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

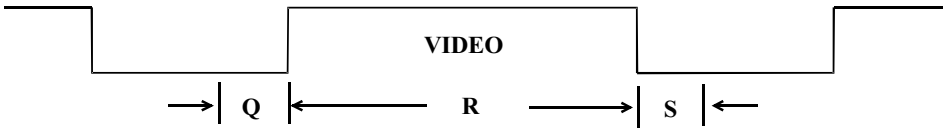
PHILIPS

SEPARATE SYNC.

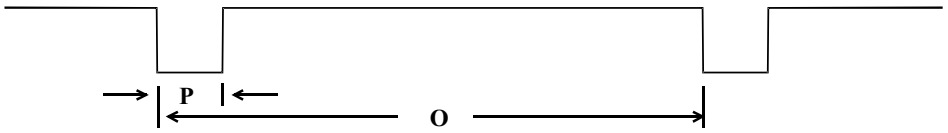


HORIZONTAL

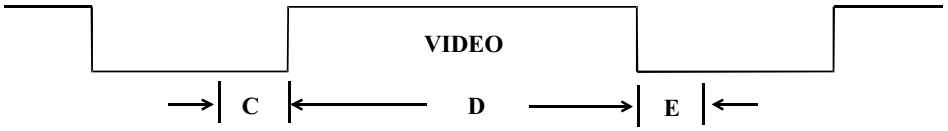




VERTICAL



COMPOSITE SYNC.



HORIZONTAL

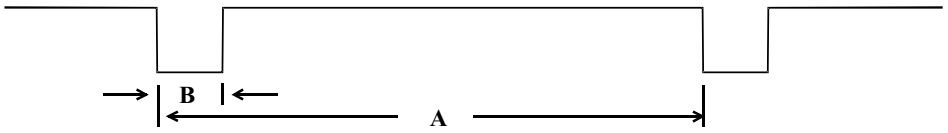


FIG-8 TIMING CHART -1

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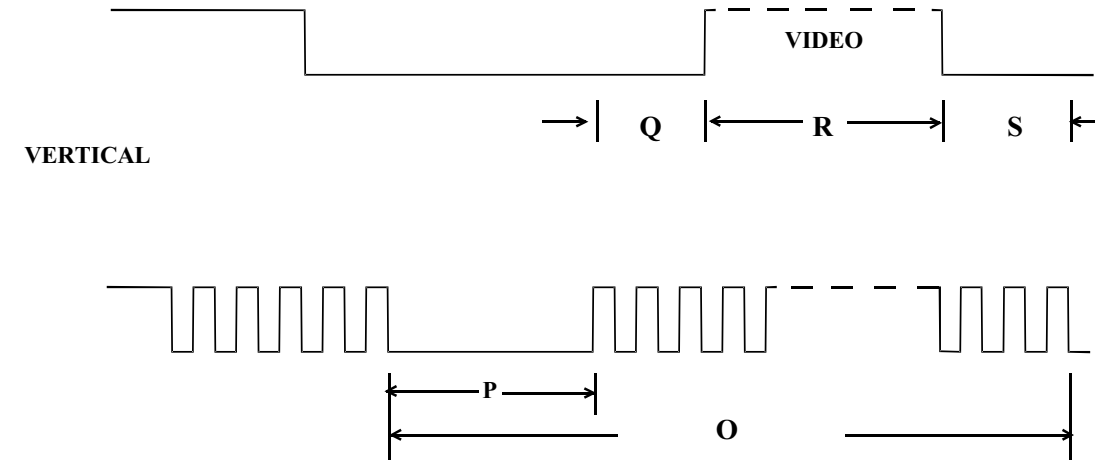
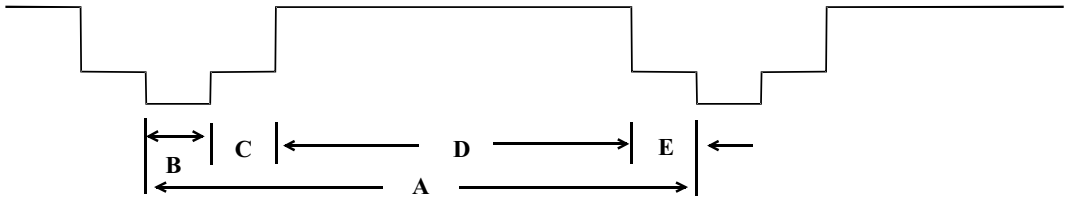
CLASS NO.	21" AUTO SCAN CMTR TYPE : 201B40/00C-M25P-201B4 BRAND : PHILIPS		8639 000 11832			
2002-01-23						
NAME ALEX CHEN	SUPERS.	31	590 — 30	10		A4
TY CHECK	DATE 2002-01-23	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				

PHILIPS



COMPOSITE SYNC. & VIDEO
(SYNC. ON GREEN)

HORIZONTAL



VERTICAL

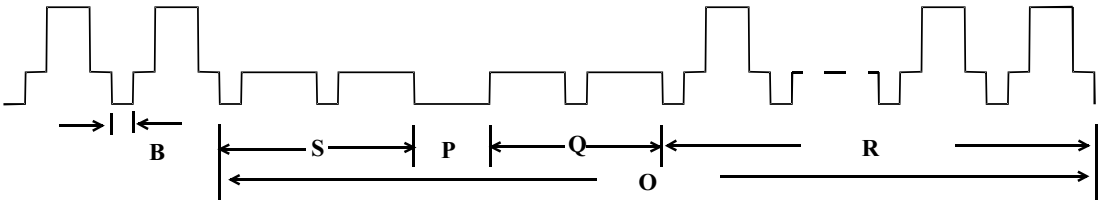


FIG-9 TIMING CHART -2

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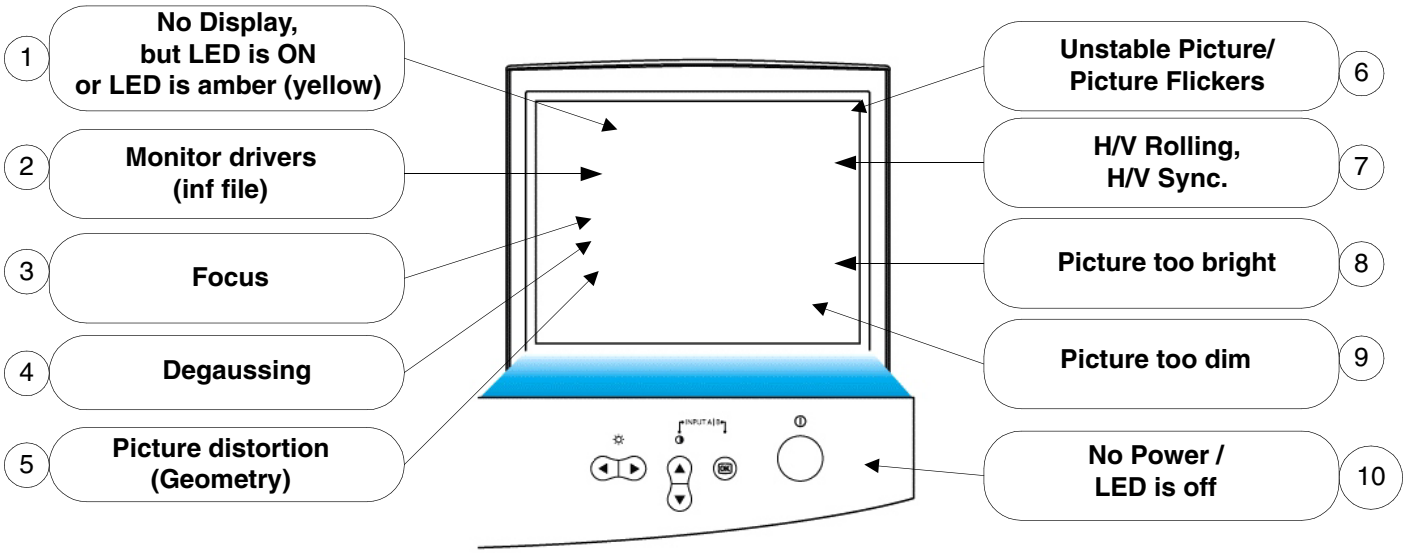
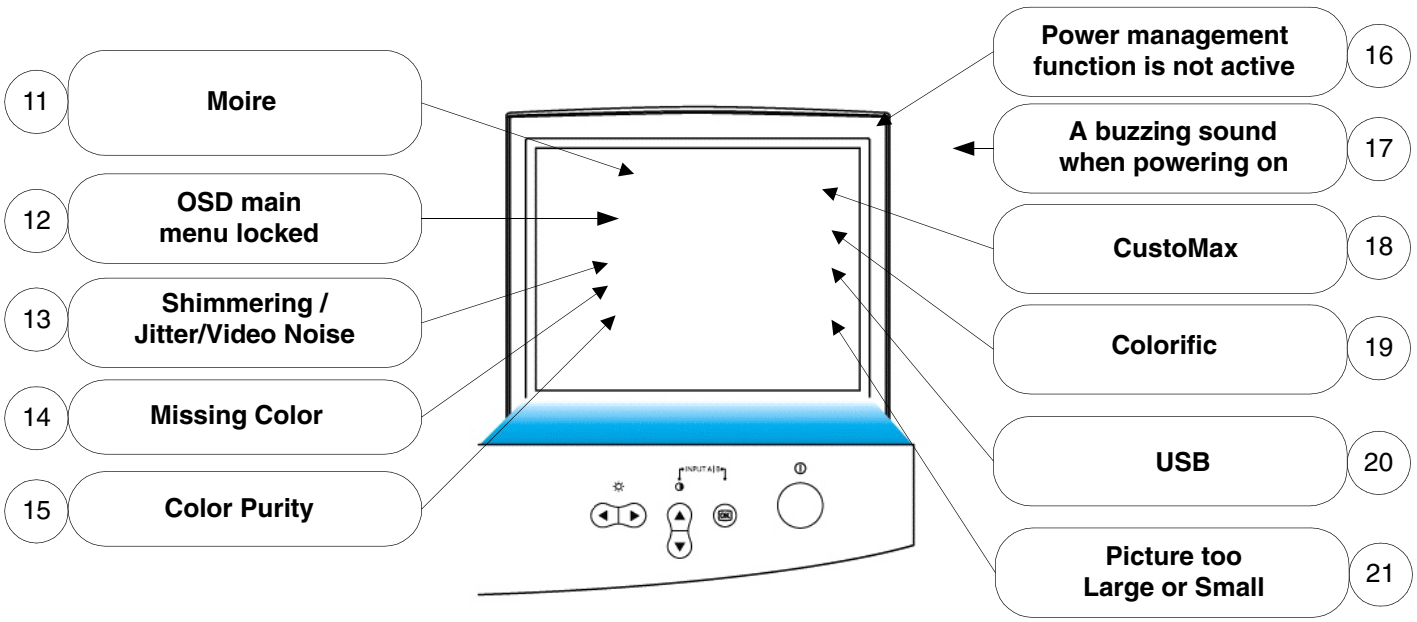
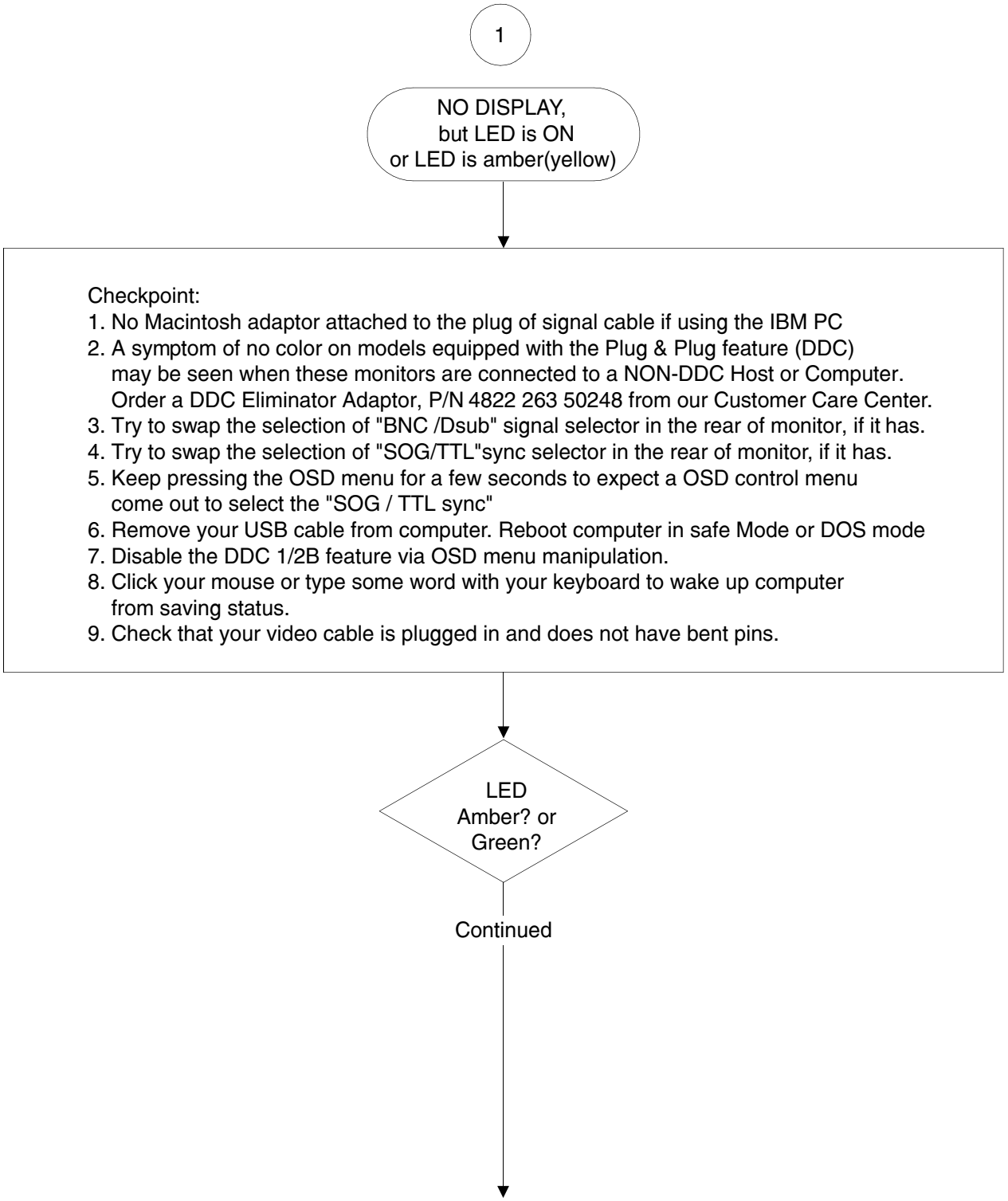
General Troubleshooting Guide

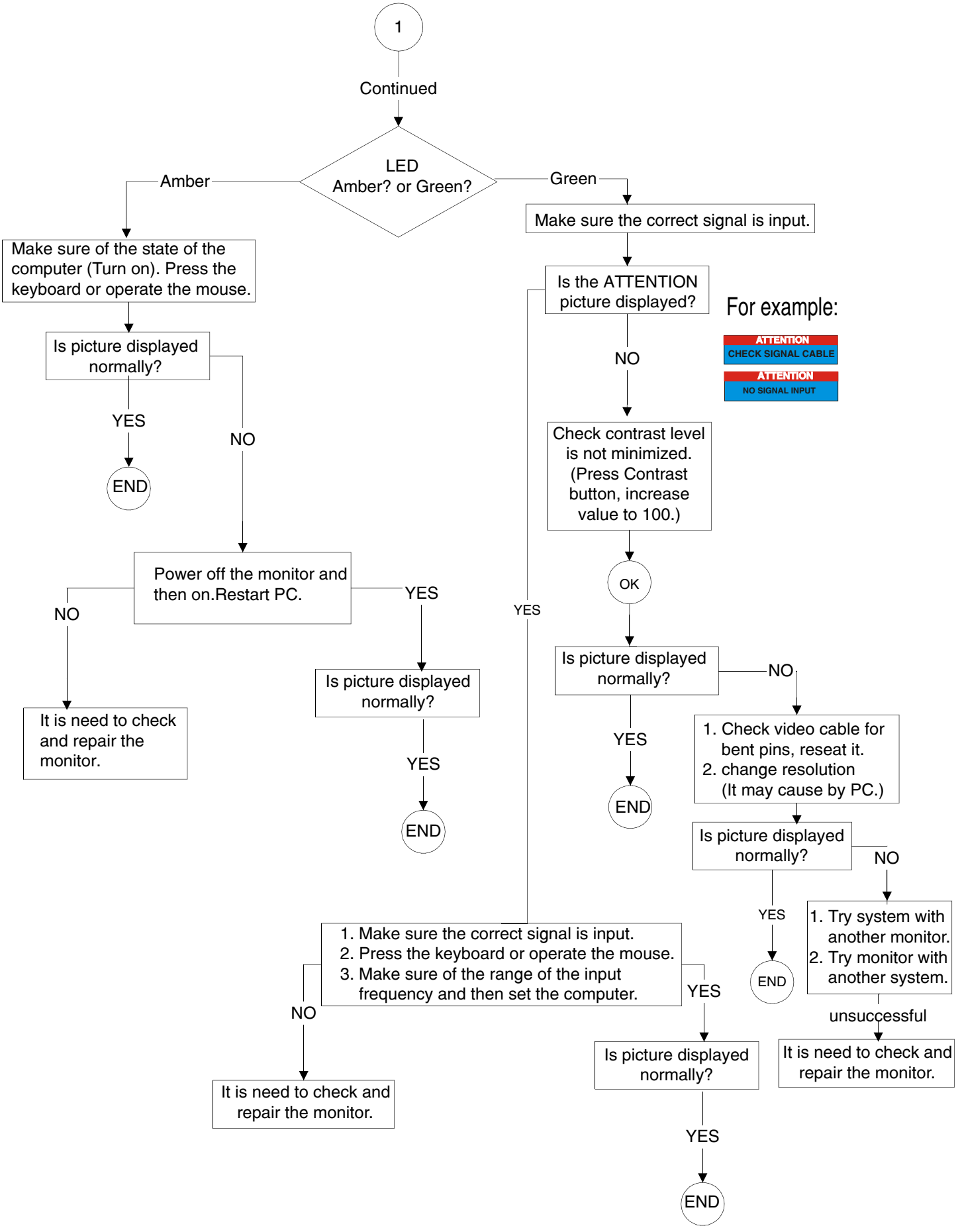




Note : Not all described feature are applicable for all monitors.

General Troubleshooting Guide




1
Continued
LED
Amber? or Green?
Amber
Green
Make sure of the state of the computer (Turn on). Press the keyboard or operate the mouse.
Is picture displayed normally?
YES
END
NO
Power off the monitor and then on.Restart PC.
NO
It is need to check and repair the monitor.
YES
Is picture displayed normally?
YES
END
Make sure the correct signal is input.
Is the ATTENTION picture displayed?
NO
Check contrast level is not minimized. (Press Contrast button, increase value to 100.)
OK
Is picture displayed normally?
YES
END
NO
1. Check video cable for bent pins, reseat it.
2. change resolution (It may cause by PC.)
Is picture displayed normally?
YES
END
NO
1. Try system with another monitor.
2. Try monitor with another system.
unsuccessful
It is need to check and repair the monitor.
YES
1. Make sure the correct signal is input.
2. Press the keyboard or operate the mouse.
3. Make sure of the range of the input frequency and then set the computer.
NO
It is need to check and repair the monitor.
YES
Is picture displayed normally?
YES
END
For example:
ATTENTION
CHECK SIGNAL CABLE
ATTENTION
NO SIGNAL INPUT

General Troubleshooting Guide

2 **Monitor drivers (inf file)**

for Windows 95/98/2000/Me or later

Philips' monitors build in VESA DDC2B feature to support Plug & Play requirement for Windows 95/98/2000/Me . You can install the information file (.inf) in order to select your Philips monitor from "Monitor" dialog box in Windows 95/98/2000/Me to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 , 98 , Me and 2000 is specified as follows, (In case of connecting the monitor to the PC compliant with VESA standard with the designated signal cable, the PC reads display pixels, frequency, and color feature of this monitor to optimise the picture for the monitor automatically.)
DDC : Abbreviation for Display Data Channel

**** Windows NT 4.0 does not inquire driver (inf file) for monitors.****

For Windows 95

For Windows95 drivers , our monitor is listed 1 manufacture name "Philips Business Electronics Co.".

1. Start Windows '95
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, point to 'Change...' then click 'Have Disk...'.
6. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
7. Click the 'OK' button then choose your monitor model and click the 'OK'.
8. Click 'Close' button.

For Windows 98

But for Windows98 drivers, our monitors are listed under 2 manufactures name "Philips", "Philips Consumer Electronics Co". Please select "Philips" when you would like to set up your monitor in Windows setting , unless you can not find the right model name just as the label indication on the back of set. For those set that have been issued since the release of Win98 , drivers can be found in CDROM under the directory path of " \ pc\ driver \" or it may be downloaded at "http: \www.philips.com". Once you have installed the new driver , Windows will add a new manufacture name "Philips Business Electronics" in your system.

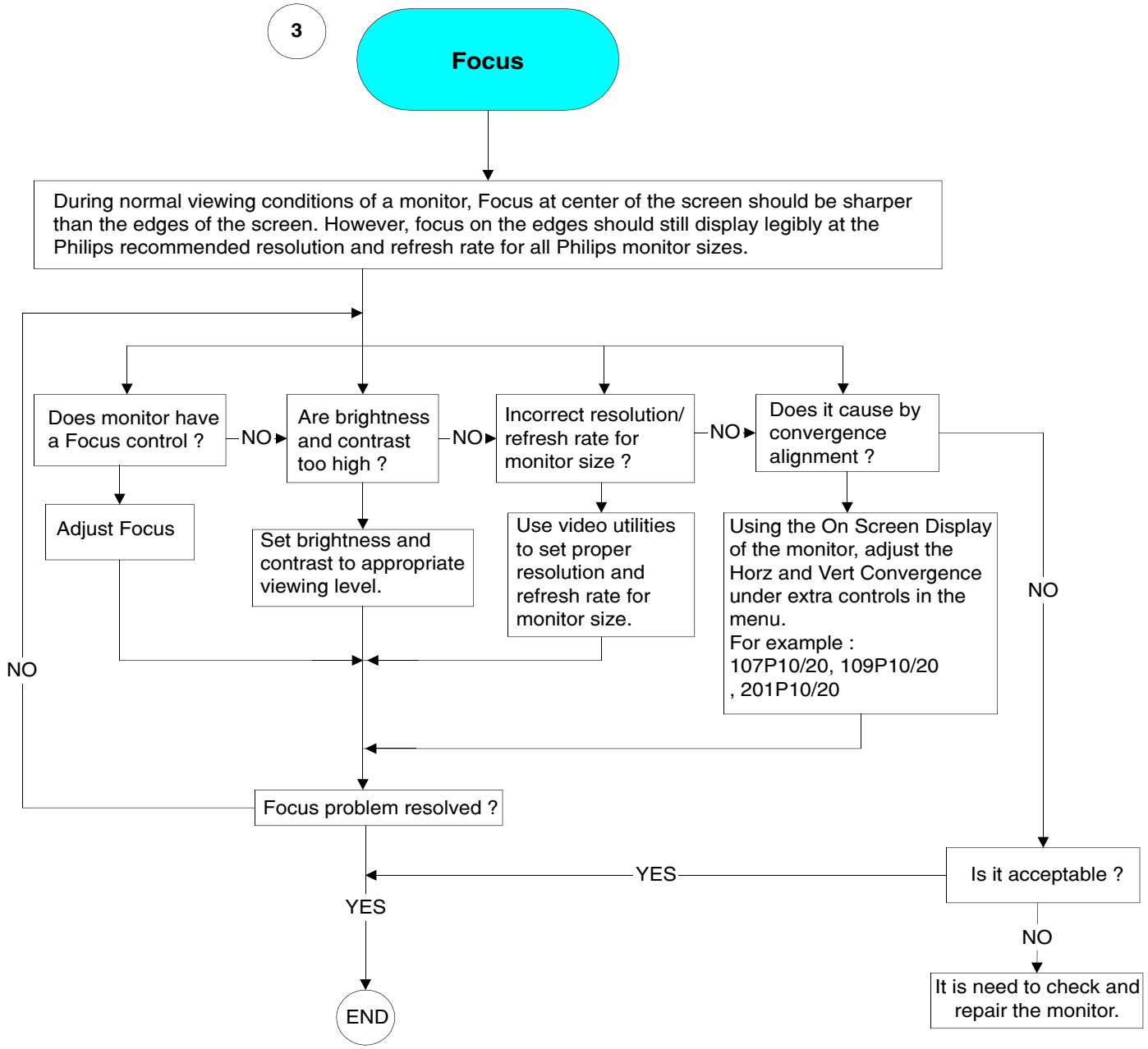
1. Start Windows 98
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, point to 'Change...' then click 'Next'
6. Choose "Display a list of all the drivers in a specific location, so you can elect the driver you want. " then click 'Next' and then click 'Have Disk...'.
7. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
8. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
9. Click 'Finish' button then the 'Close' button.

For Windows Me

1. Start Windows Me
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor' button, then click 'Change...' button.
6. Choose "Specify the location of the driver (Advanced)" and click the 'Next' button.
7. Choose "Display a list of all the drivers in a specific location, so you can select the driver you want." then click 'Next' and then click 'Have Disk...'.
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive) then click 'OK' button.
9. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
10. Click 'Finish' button then the 'Close' button.

For Windows 2000

1. Start Windows 2000
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.
5. Choose 'Monitor'
   - If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.
   - If the 'Properties' button is active. Click 'Properties' button. Please follow next step continually.
6. Click 'Driver' and then click on 'Update Driver...' then click on the 'Next' button.
7. Choose "Display a list of the known drivers for this device so that I can choose a specific driver" then click 'Next' and then click 'Have disk...'.
8. Click 'Browse...' button then choose the appropriate drive F: (CD-ROM Drive).
9. Click the 'Open' button, then click the 'OK' button.
10. Choose your monitor model and click the 'Next' button then click 'Next' button.
11. Click 'Finish' button then the 'Close' button. If you can see the "Digital Signature Not Found" window then click the 'Yes' button.



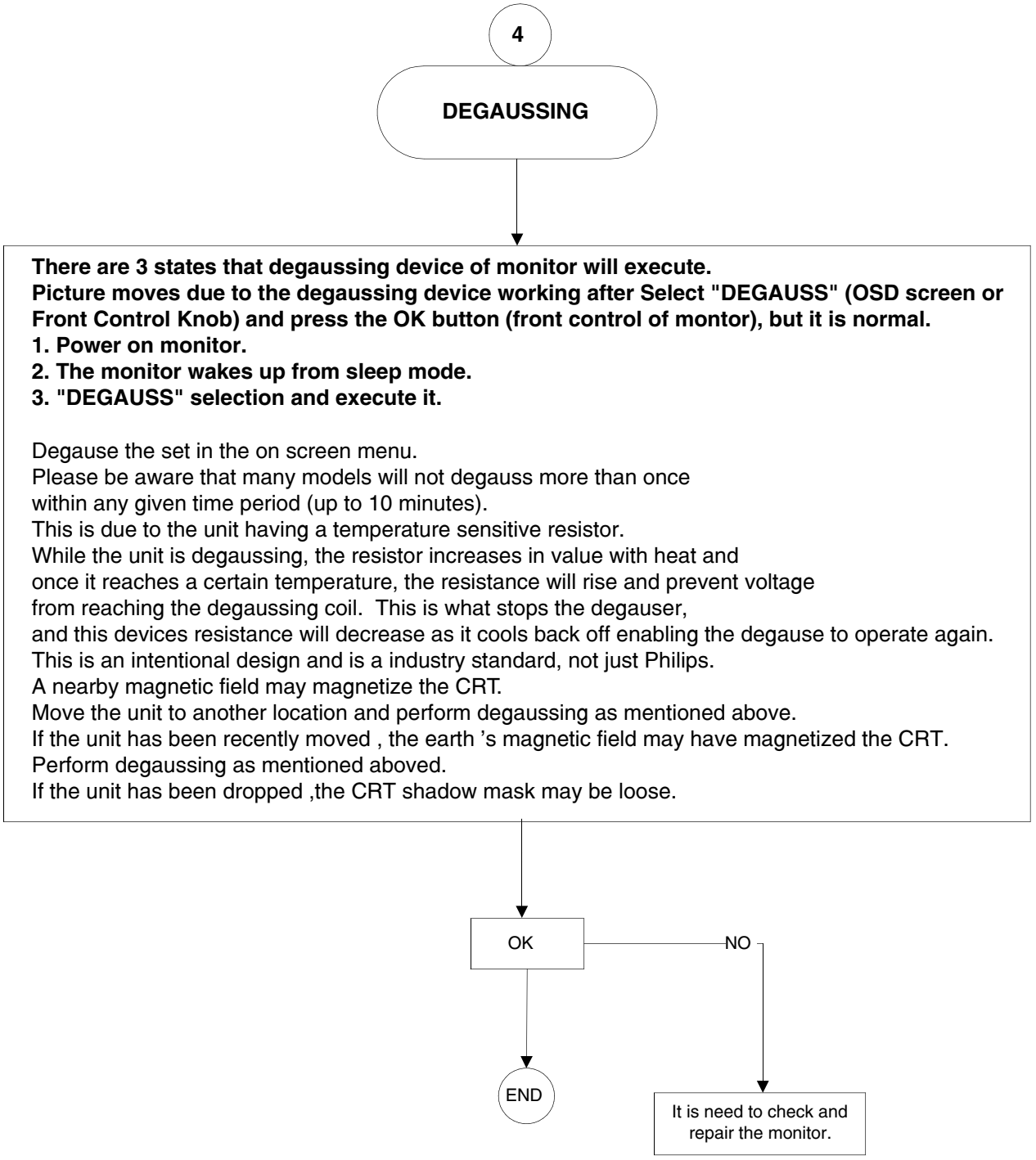
Case study : P-Line Focus issue (107P10/20, 109P10/20, 201P10)

Symptom: Poor Focus, Blurry Picture, colored outlines around characters.
Possible Cause:
Convergence Issues:
What is Convergence : As we know the CRT is comprised of thousands of color phosphor dots, (red, Green, and Blue). Convergence is the alignment to ensure that the proper electron beam strikes the correct colored phosphor dot and the correct triad of phosphor dots. (Triad = a group of each colored phosphor dots forming a triangle / Bold below) For a better photo refer to any of our CD ROM's under glossary of terms and Dot Pitch.

R G B R G B R G B
B R G B R G B R
R G B R G B R G B

Convergence is typically not adjustable by the customer.
On the P-Line with a Diamondtron CRT, Convergence can be found in the main menu under extra controls.
If convergence is misadjusted, it will appear out of focus to the untrained eye.
Looking closely may reveal that characters will have a colored outline around them. (Red, Green or Blue.), if so..
It is not a focus issue but a convergence alignment problem.
Cure: Using the On Screen Display of the monitor, adjust the Horz and Vert Convergence under extra controls in the menu.

General Troubleshooting Guide



5

Picture distortion (Geometry)

Tip : *****
The best way to understand "Image control features (by "On Screen Display" or "Front Control Knob") is to minimize and maxmize each control feature while viewing a full image on the screen. By performing this, the customer will immediately understand:
1. How "Image control features" effect the image.
2. How to use "Image control features" to optimize the image.

Some type of magnetic or electrical interference typically causes poor geometry in the picture and is not normally a defective monitor.
Try the monitor in another physical location before suspecting the monitor itself.

: Reset monitor to factory preset via OSD menu maniputlation.

: Change monitor timing to work at the recommanded resolution .

OK

NO

YES

END

Access the Geometry Menu in the "On-Screen-Display" (or "Front Control") of the Monitor. Perform necessary adjustments.

Find out the specific "Image problem"
1. H or V size
2. H or V position
3. Geometry
   a. Pincushion
   b. Balanced
   c. Trapezoid
   d. Parallelogram
   e. Tilt

H or V size

H or V position

Geometry problem

Is the control available ?

YES

Optimize with Image feature controls

Is picture displayed normally?

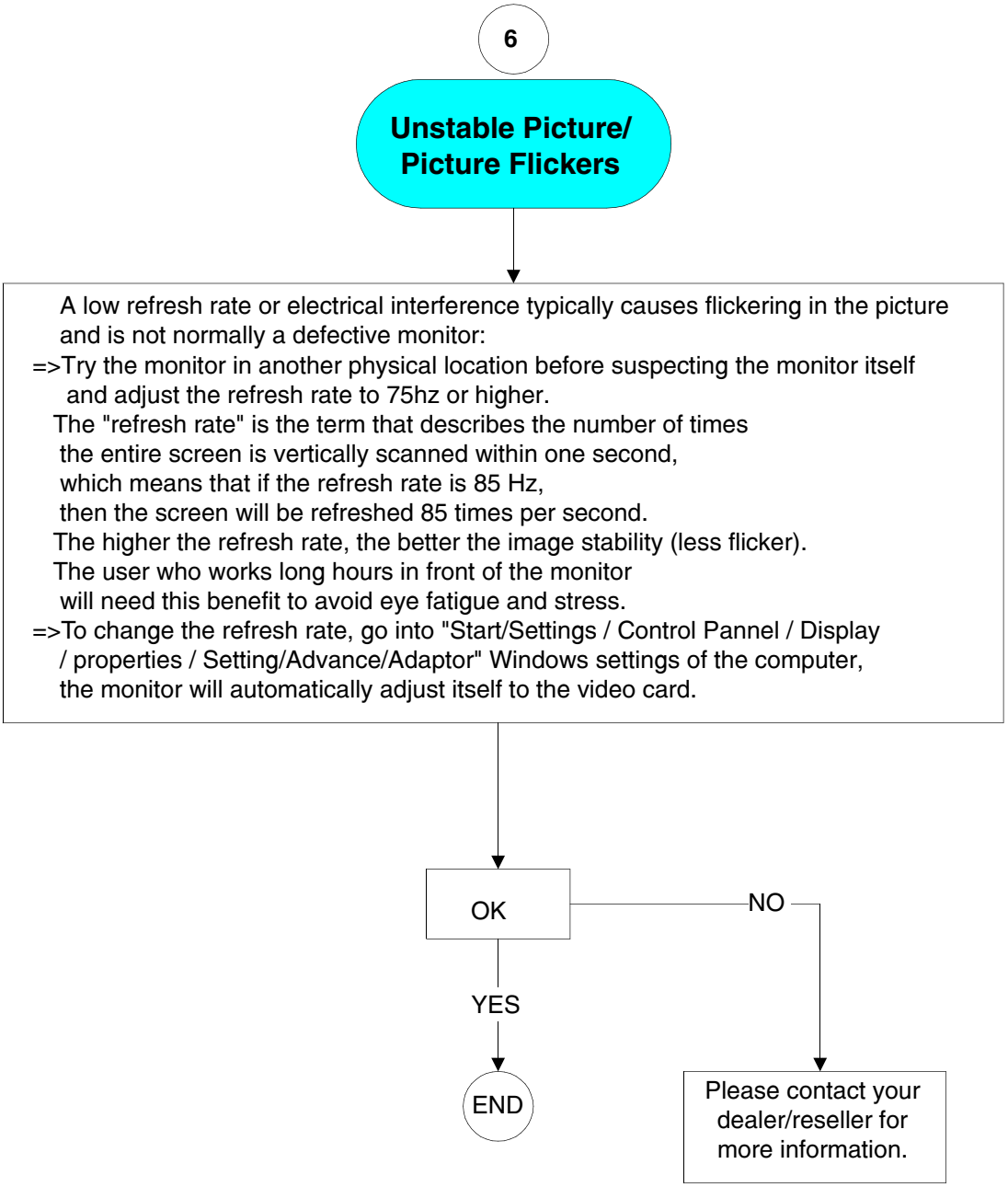
NO

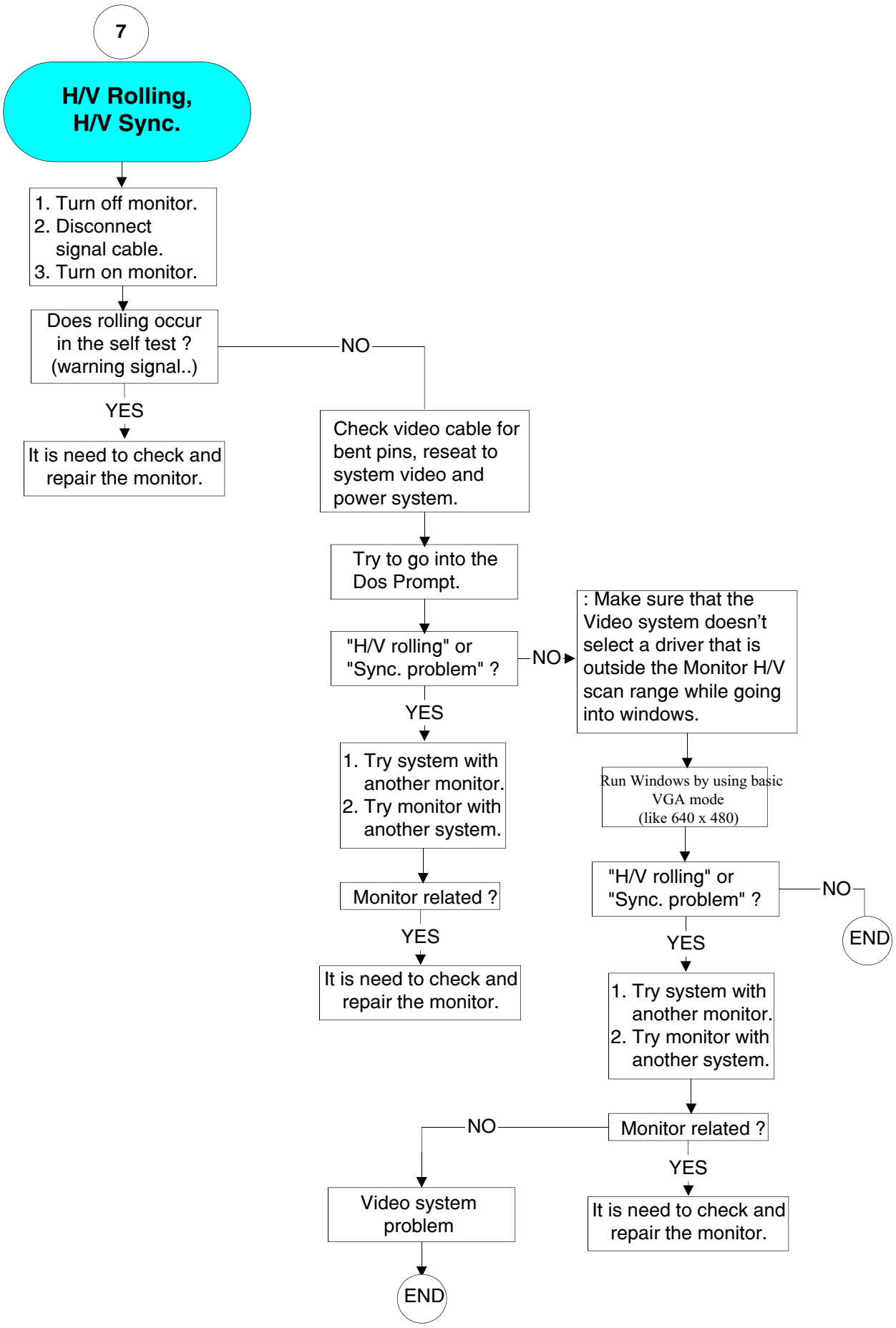
YES

END

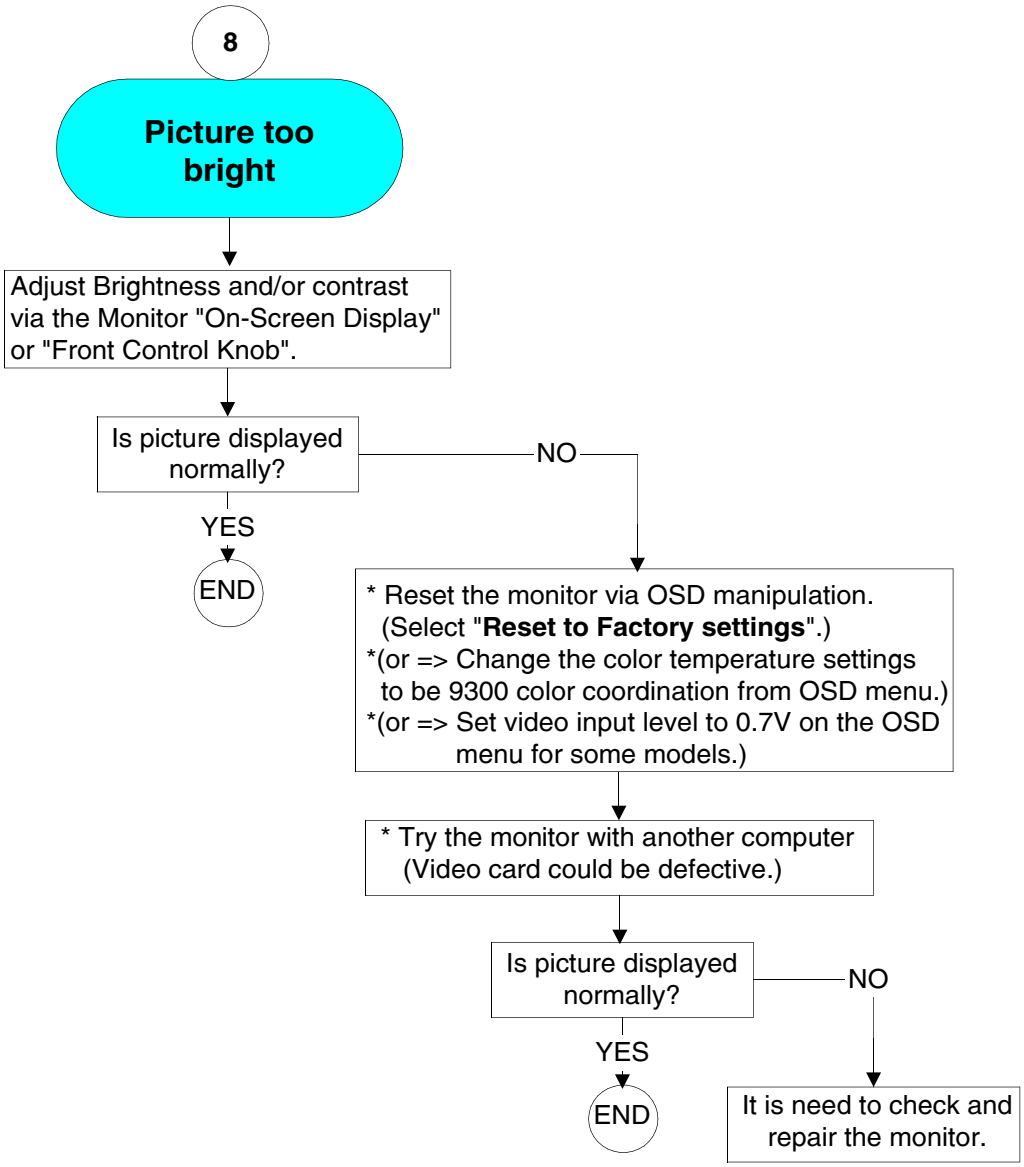
It is need to check and repair the monitor.

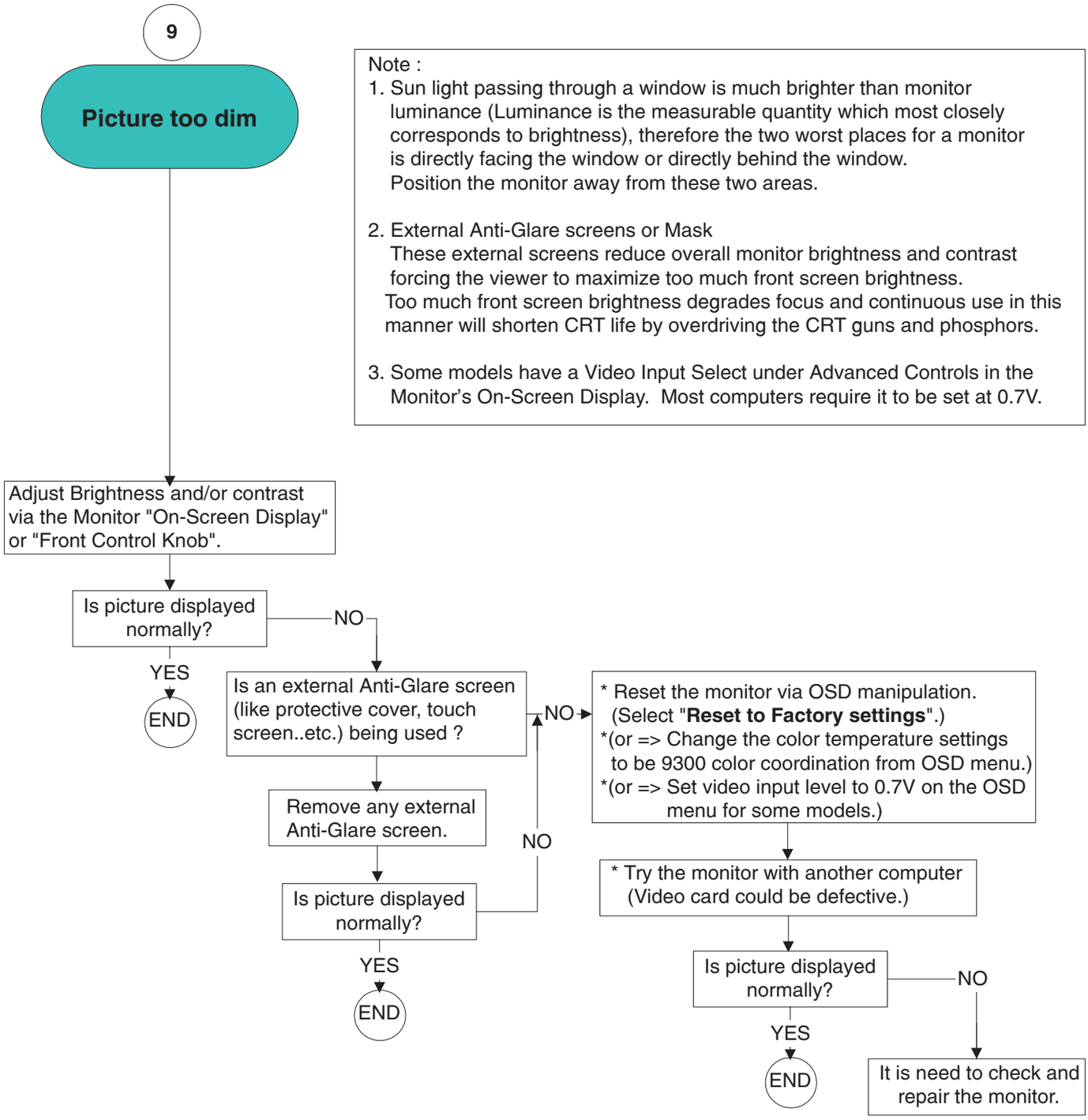
General Troubleshooting Guide



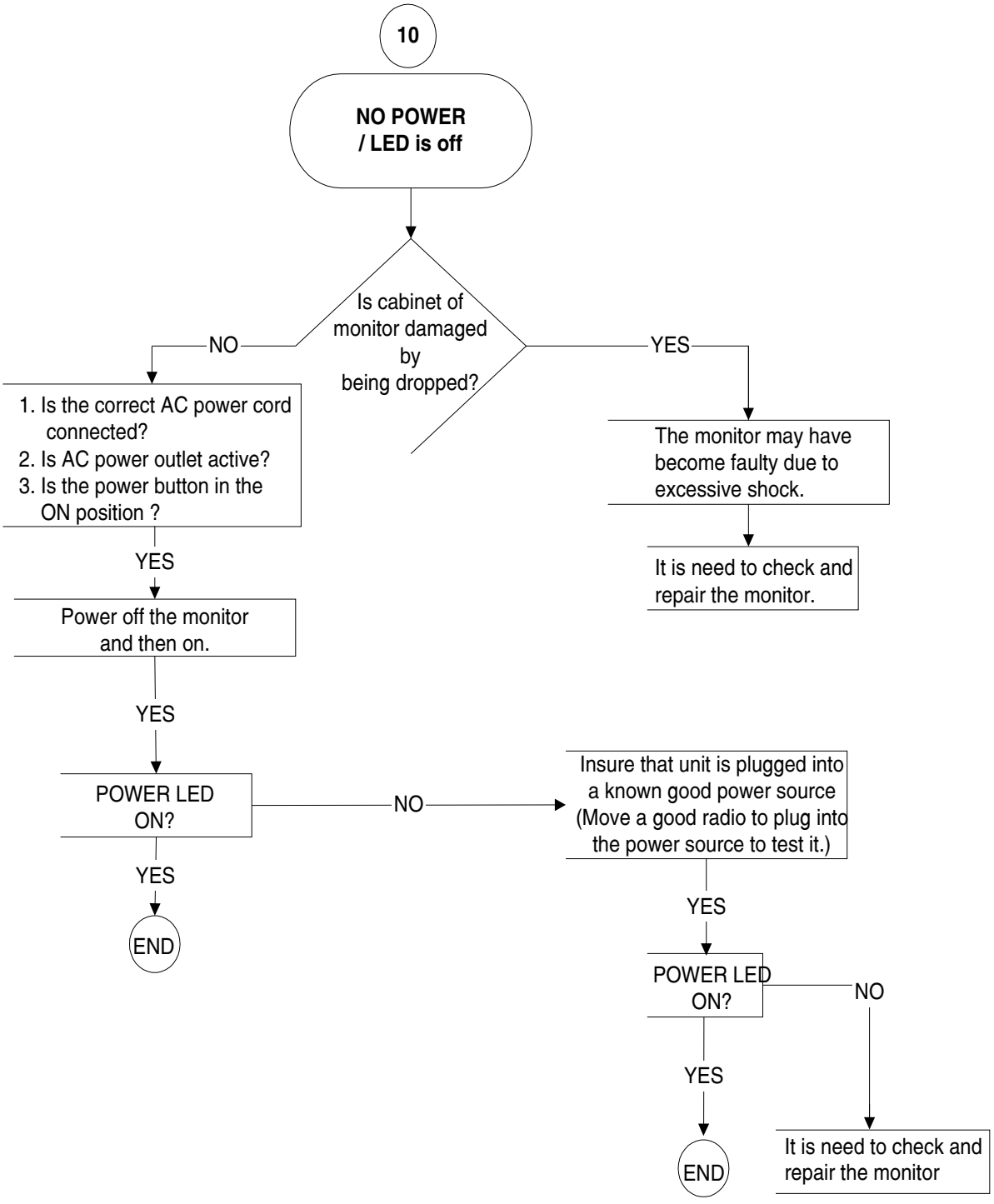

7
H/V Rolling, H/V Sync.
1. Turn off monitor.
2. Disconnect signal cable.
3. Turn on monitor.
Does rolling occur in the self test ? (warning signal..)
NO
YES
It is need to check and repair the monitor.
Check video cable for bent pins, reseat to system video and power system.
Try to go into the Dos Prompt.
"H/V rolling" or "Sync. problem" ?
NO
YES
: Make sure that the Video system doesn't select a driver that is outside the Monitor H/V scan range while going into windows.
Run Windows by using basic VGA mode (like 640 x 480)
"H/V rolling" or "Sync. problem" ?
NO
END
YES
1. Try system with another monitor.
2. Try monitor with another system.
Monitor related ?
YES
It is need to check and repair the monitor.
1. Try system with another monitor.
2. Try monitor with another system.
Monitor related ?
NO
YES
Video system problem
It is need to check and repair the monitor.
END

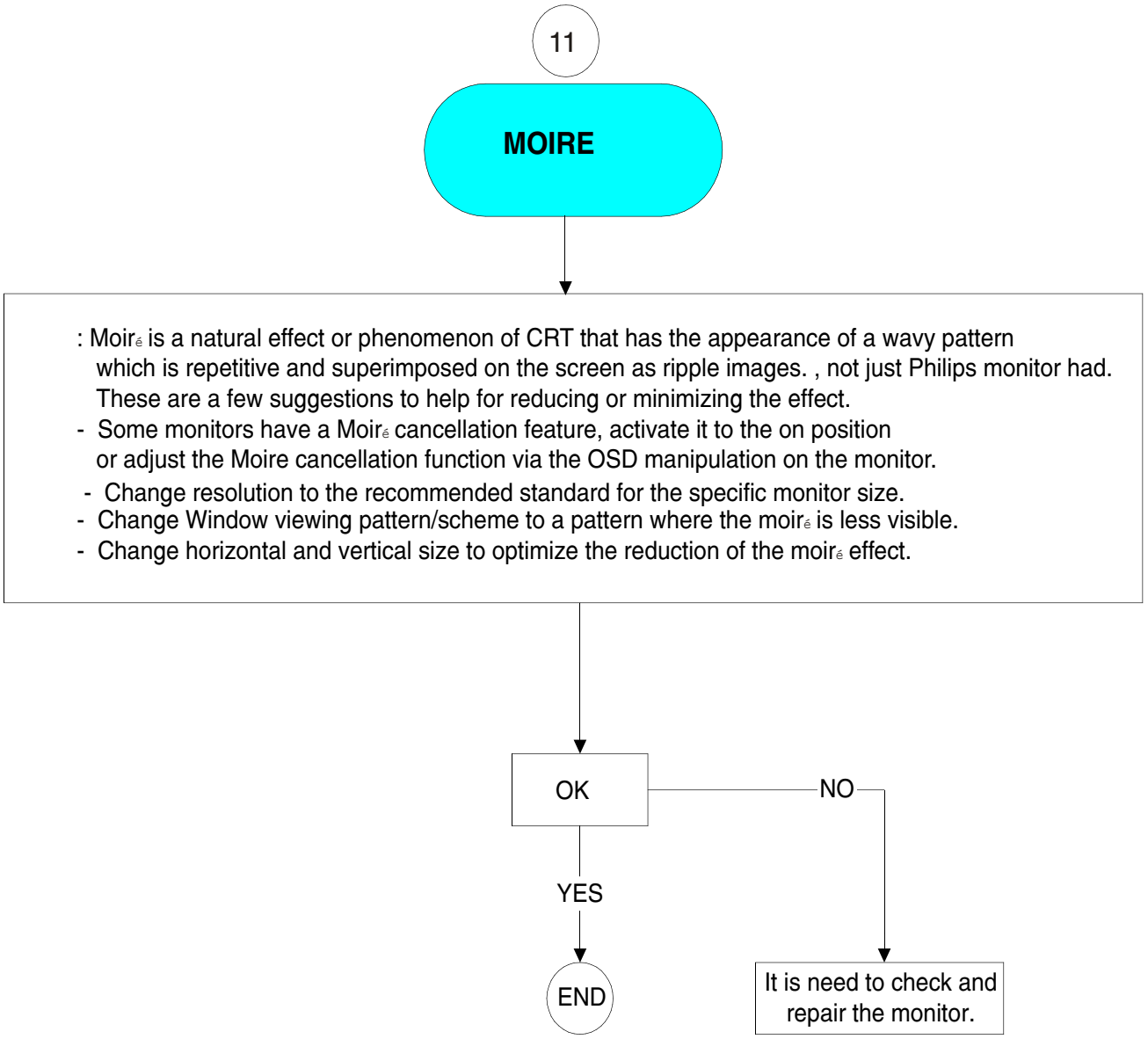
General Troubleshooting Guide




9
Picture too dim
Note :
1. Sun light passing through a window is much brighter than monitor luminance (Luminance is the measurable quantity which most closely corresponds to brightness), therefore the two worst places for a monitor is directly facing the window or directly behind the window. Position the monitor away from these two areas.
2. External Anti-Glare screens or Mask
These external screens reduce overall monitor brightness and contrast forcing the viewer to maximize too much front screen brightness. Too much front screen brightness degrades focus and continuous use in this manner will shorten CRT life by overdriving the CRT guns and phosphors.
3. Some models have a Video Input Select under Advanced Controls in the Monitor's On-Screen Display. Most computers require it to be set at 0.7V.
Adjust Brightness and/or contrast via the Monitor "On-Screen Display" or "Front Control Knob".
Is picture displayed normally?
NO
YES
END
Is an external Anti-Glare screen (like protective cover, touch screen..etc.) being used ?
NO
Remove any external Anti-Glare screen.
Is picture displayed normally?
NO
YES
END
* Reset the monitor via OSD manipulation. (Select "Reset to Factory settings".)
*(or => Change the color temperature settings to be 9300 color coordination from OSD menu.)
*(or => Set video input level to 0.7V on the OSD menu for some models.)
* Try the monitor with another computer (Video card could be defective.)
Is picture displayed normally?
NO
YES
END
It is need to check and repair the monitor.

General Troubleshooting Guide



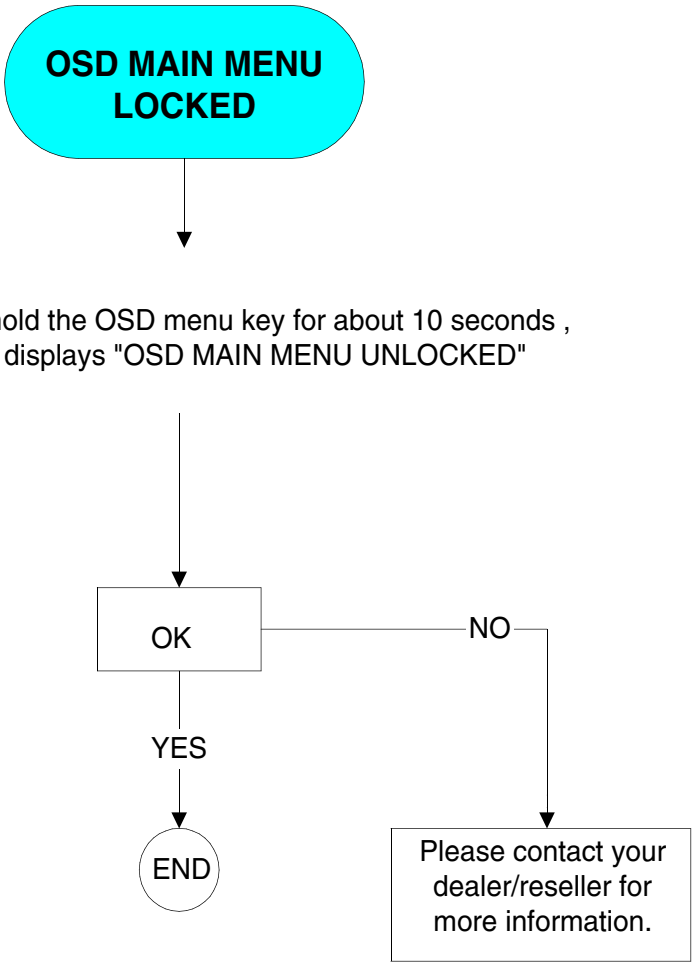


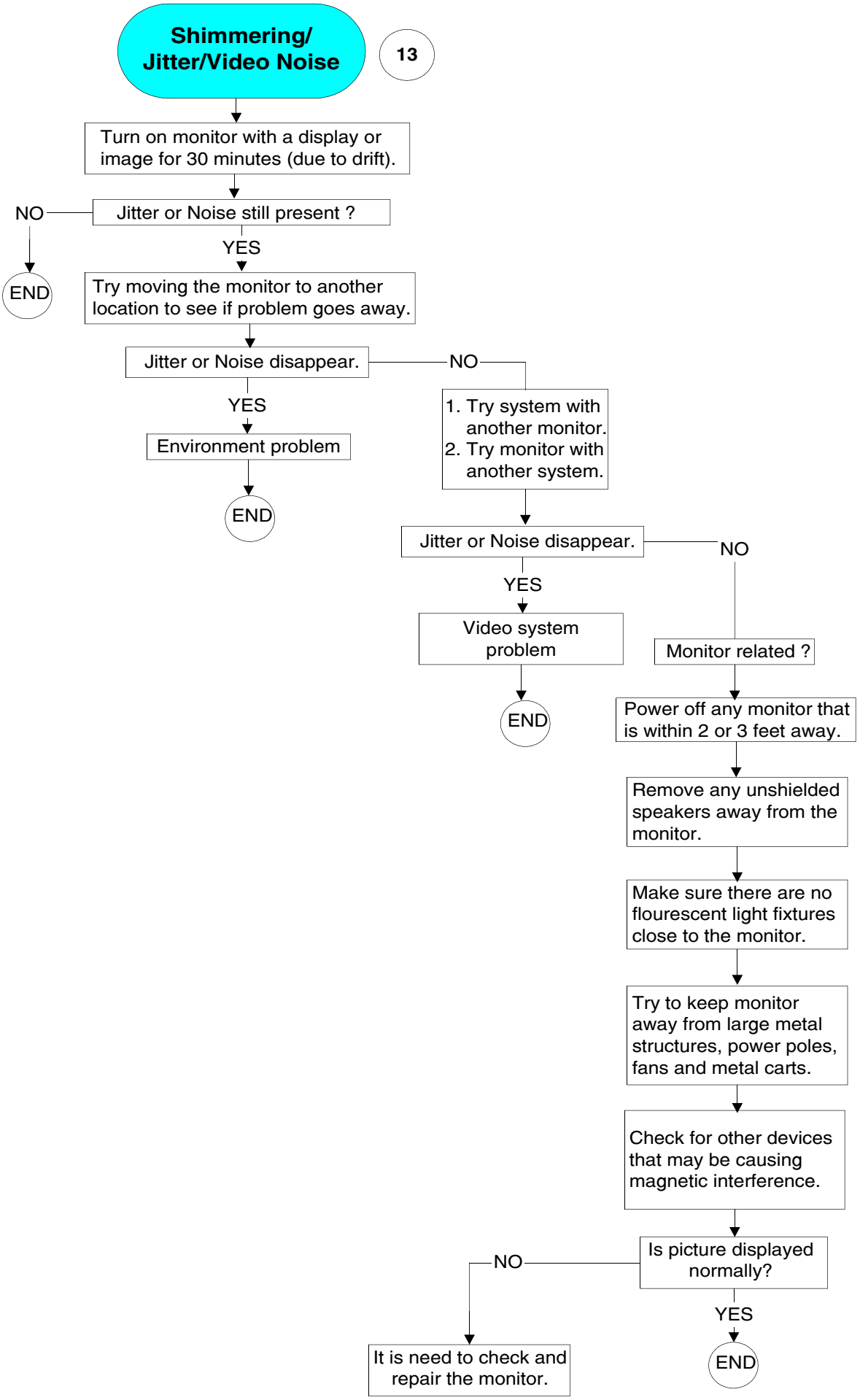
MOIRÉ

A fringe pattern arising from the interference between two superimposed line patterns. In a monitor it comes from the interference between the shadow mask pattern and the video information (video moiré), and between the shadow mask and the horizontal line pattern (scan moiré). It shows itself as wavy patterns on the screen and becomes more noticeable as monitor resolution increases. Since the video signals varies continuously, little can be done about video moiré. Scan moiré depends on the horizontal scanning frequency and can be alleviated by appropriate choice of this frequency. Autoscan (MultiSync) monitors, however, which operate over a range of scanning frequencies, may sometimes exhibit moiré in certain video modes.

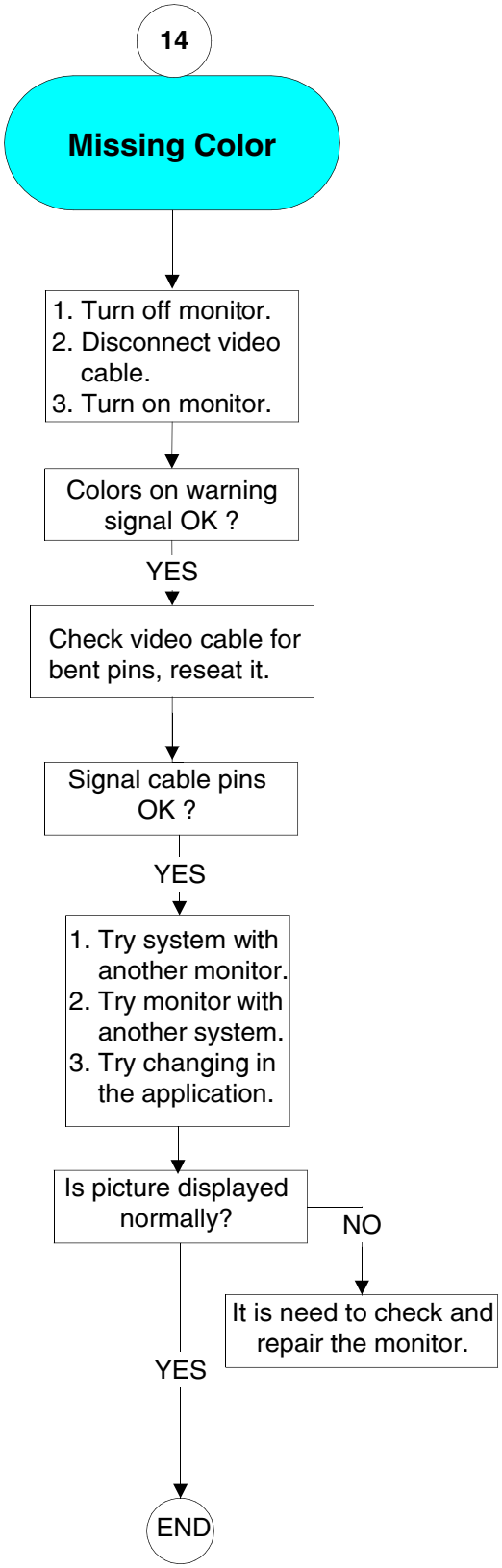
Several sources can act as a catalyzer to produce Moire. They are : The CRT, shadow mask, the electron beam spot size, the resolution, video patterns, and the horizontal and vertical size.

General Troubleshooting Guide



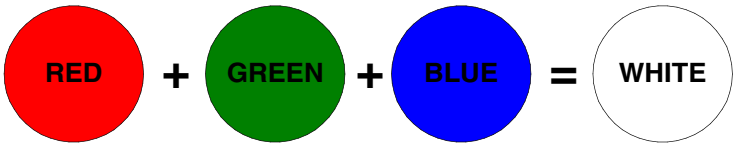

Shimmering/ Jitter/Video Noise
13
Turn on monitor with a display or image for 30 minutes (due to drift).
Jitter or Noise still present ?
NO
YES
END
Try moving the monitor to another location to see if problem goes away.
Jitter or Noise disappear.
NO
YES
Environment problem
END
1. Try system with another monitor.
2. Try monitor with another system.
Jitter or Noise disappear.
NO
YES
Video system problem
END
Monitor related ?
Power off any monitor that is within 2 or 3 feet away.
Remove any unshielded speakers away from the monitor.
Make sure there are no flourescent light fixtures close to the monitor.
Try to keep monitor away from large metal structures, power poles, fans and metal carts.
Check for other devices that may be causing magnetic interference.
Is picture displayed normally?
NO
YES
It is need to check and repair the monitor.
END

General Troubleshooting Guide

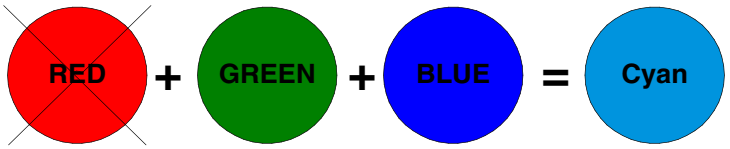


There are 2 easy ways to determine the Missing color problem.

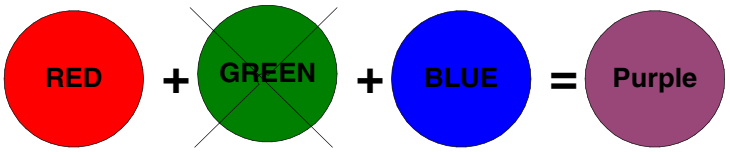
1. View an image that is supposed to be "White".
   If one of the colors (RGB) is not functioning.
   White can not be produced.
2. View an image that supposed to contain Red, Green and Blue.
   Color problems will be apparent when one or more of these colors can not be displayed.



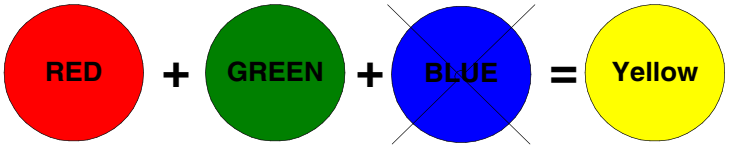
Cyan Color means that the red gun is missing.

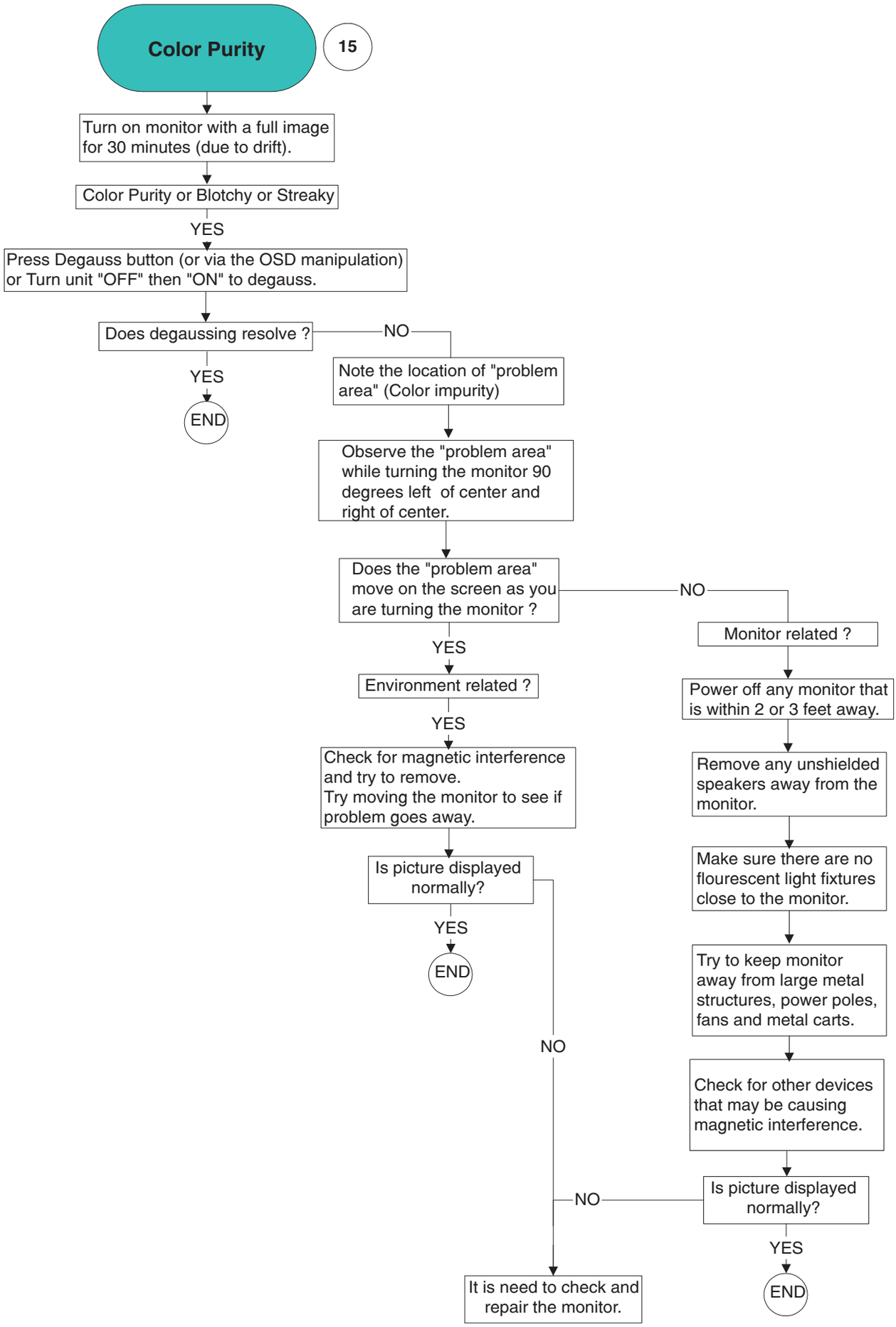


Magenta or Purple Color means that the green gun is missing.

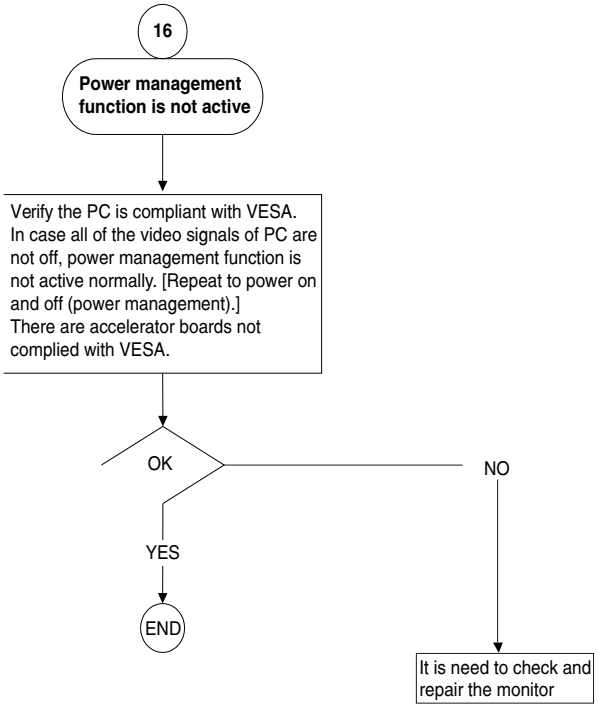


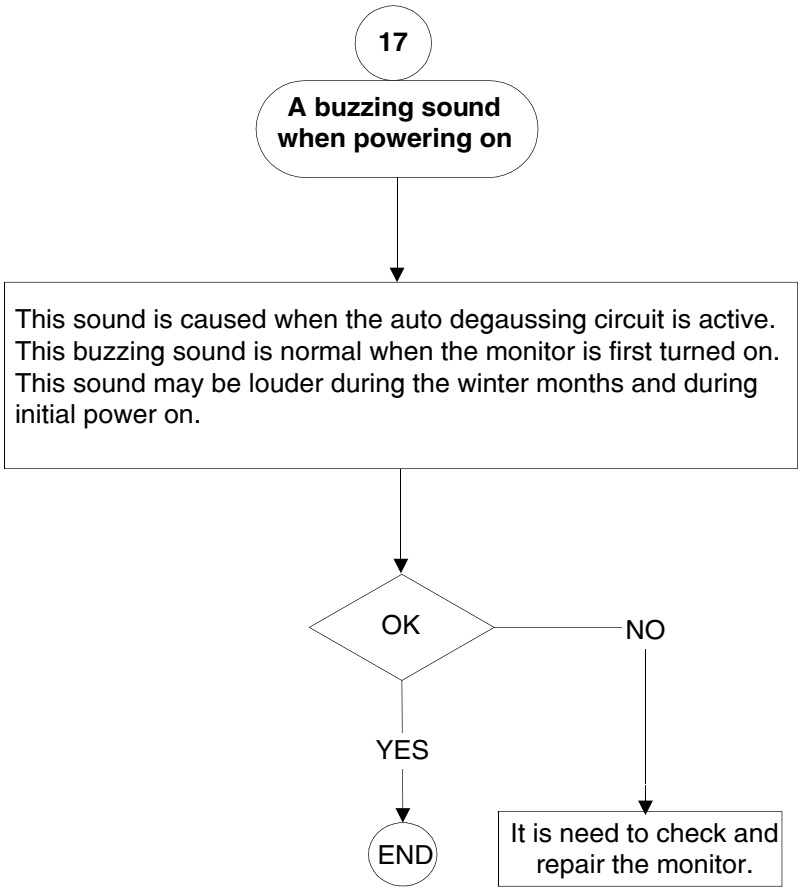
Yellow Color means that the blue gun is missing.



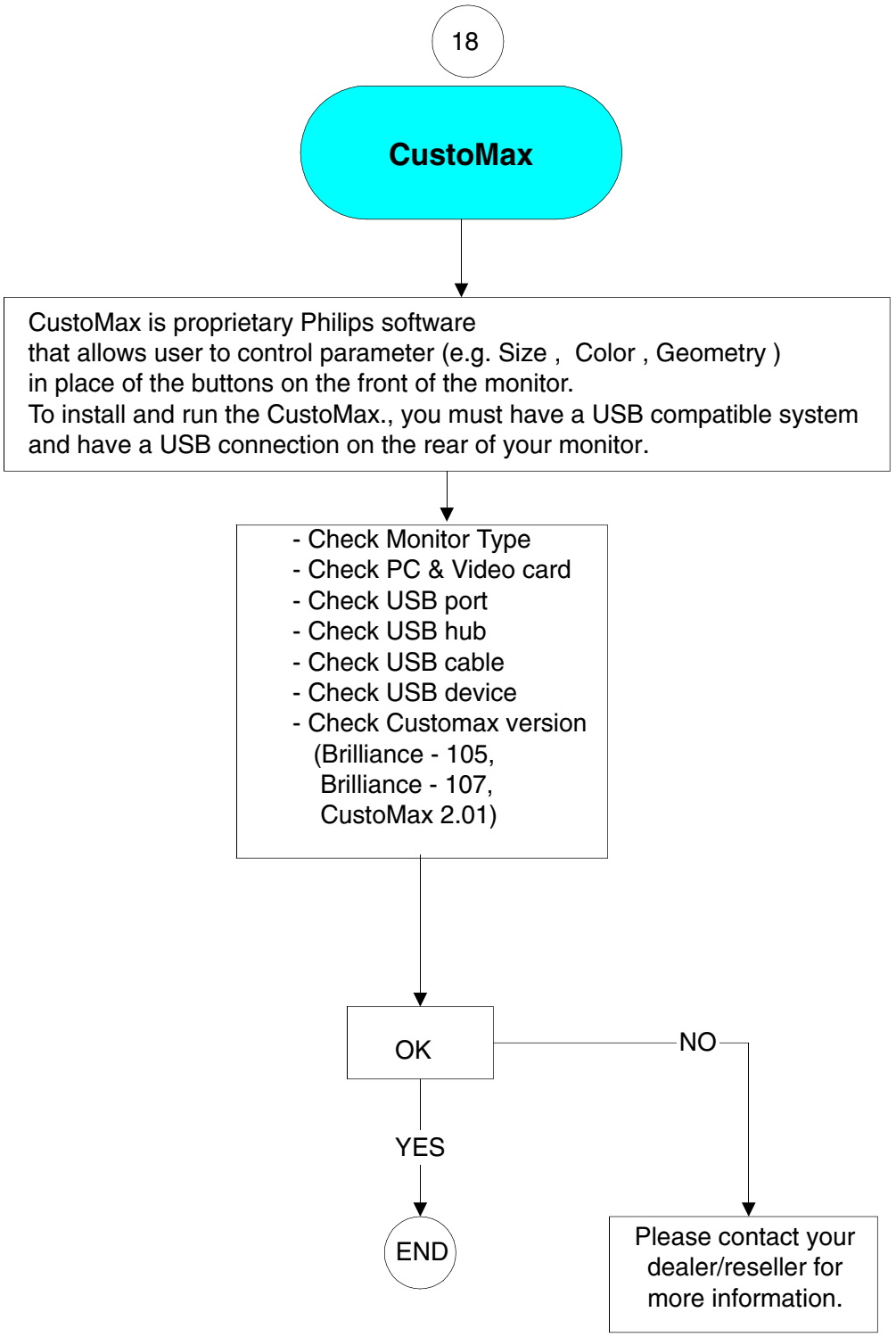

Color Purity
15
Turn on monitor with a full image for 30 minutes (due to drift).
Color Purity or Blotchy or Streaky
YES
Press Degauss button (or via the OSD manipulation) or Turn unit "OFF" then "ON" to degauss.
Does degaussing resolve ?
NO
YES
END
Note the location of "problem area" (Color impurity)
Observe the "problem area" while turning the monitor 90 degrees left of center and right of center.
Does the "problem area" move on the screen as you are turning the monitor ?
NO
YES
Monitor related ?
Environment related ?
YES
Power off any monitor that is within 2 or 3 feet away.
Check for magnetic interference and try to remove.
Try moving the monitor to see if problem goes away.
Remove any unshielded speakers away from the monitor.
Is picture displayed normally?
YES
END
Make sure there are no flourescent light fixtures close to the monitor.
Try to keep monitor away from large metal structures, power poles, fans and metal carts.
NO
Check for other devices that may be causing magnetic interference.
Is picture displayed normally?
NO
YES
END
It is need to check and repair the monitor.

General Troubleshooting Guide




17
A buzzing sound when powering on
This sound is caused when the auto degaussing circuit is active. This buzzing sound is normal when the monitor is first turned on. This sound may be louder during the winter months and during initial power on.
OK
NO
YES
END
It is need to check and repair the monitor.

General Troubleshooting Guide



Features:
CustoMax for monitors is a software program for adjusting the screen geometry, color quality, image quality and hardware and software settings of your display.

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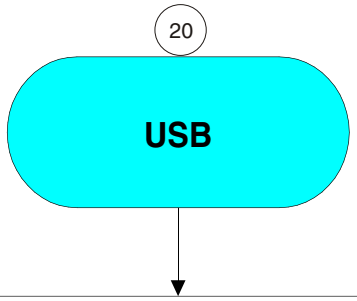
Colorific

Colorific is a color matching software that helps user match the monitor
and printer to fulfill the requirement of WYSIWYG (what you see is what you get) .
The Colorific software is the property of Sonnetech ,Ltd.
Only certain Philips monitor Models are equiped with the software.
If you have special interesting , please hit the web site "http:\www.colorific.com".

The compatibily problem with Windows :
Colorific 4.2 or below issued before Sept 98 cannot run in Win98.
Colorific 4.24 (CM5800) manufactured before May 1998 and issued by Feb 98 can support Win 98.
Colorific4.3 can fully support in Win 98

General Troubleshooting Guide

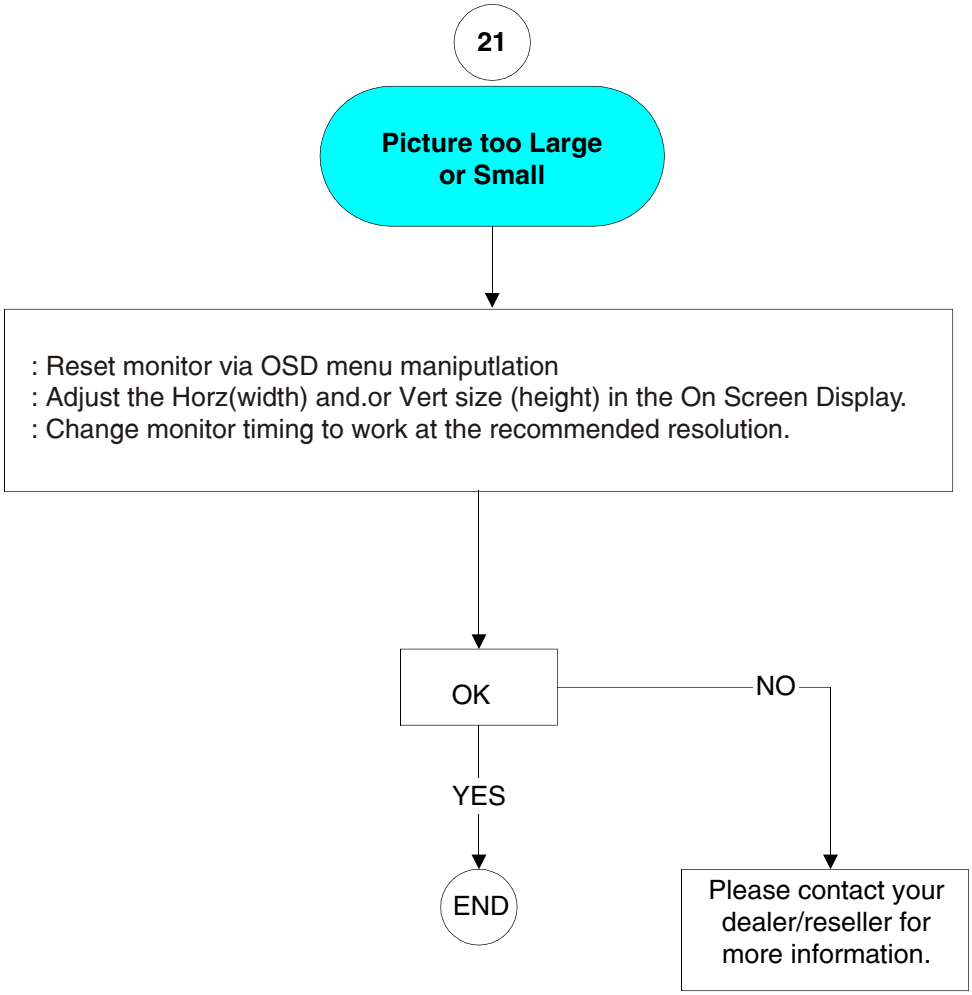


USB = Universal Serial Bus

USB automatically determines resources (like driver software and bus bandwidth)
required by peripherals.
USB makes necessary resources available without user intervention.
It is designed to meet Microsoft Plug and Play (PnP) specification, meaning users can install,
and hot-swap devices without long installation procedures and reboots.
It allows 127 devices to run at the same time on the bus.

USB bus provides two types of data transfer speed -- 1.5Mbps and 12Mbps
and it can provide a maximum of 500mA of current to devices attached on the bus.
Universal means all peripherals share the same connector.
Serial simply defines devices can daisy chain together.
Universal Serial Bus 1.1, the de facto external connectivity standard for Mac and PC,
has picked up the speed after its slow adoption by peripheral manufacturers, users and PC OEMs.

USB 2.0 :
Drafted by Compaq, Hewlett Packard, Intel, Lucent, Microsoft, NEC and Philips,
USB Specification version 2.0 will increase device data throughout
up to 480Mbps, 40 times faster than USB 1.1 devices.


21
Picture too Large or Small
: Reset monitor via OSD menu maniputlation
: Adjust the Horz(width) and.or Vert size (height) in the On Screen Display.
: Change monitor timing to work at the recommended resolution.
OK
NO
YES
END
Please contact your dealer/reseller for more information.

Go to cover page

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks
After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

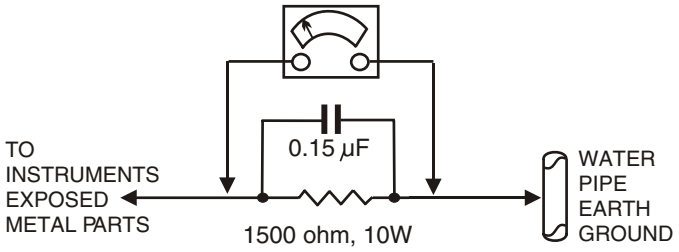
Fire and Shock Hazard
1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barries, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with ans by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safety operated without danger of electrical shock.

* Broken line

Implosion
1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation
1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an x-radiation problem. High voltage should always be kept at the manufacturer's rated value-no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operathng voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-diation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check
1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check
1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed.(Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement
The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement
Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

WARNING: Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE: The CRT DAG is not at chassis ground.